The DENTAL DIGEST

WILLIAM HARVEY
1578 - 1657

OCTOBER, 1934
Vol. 40 No. 10

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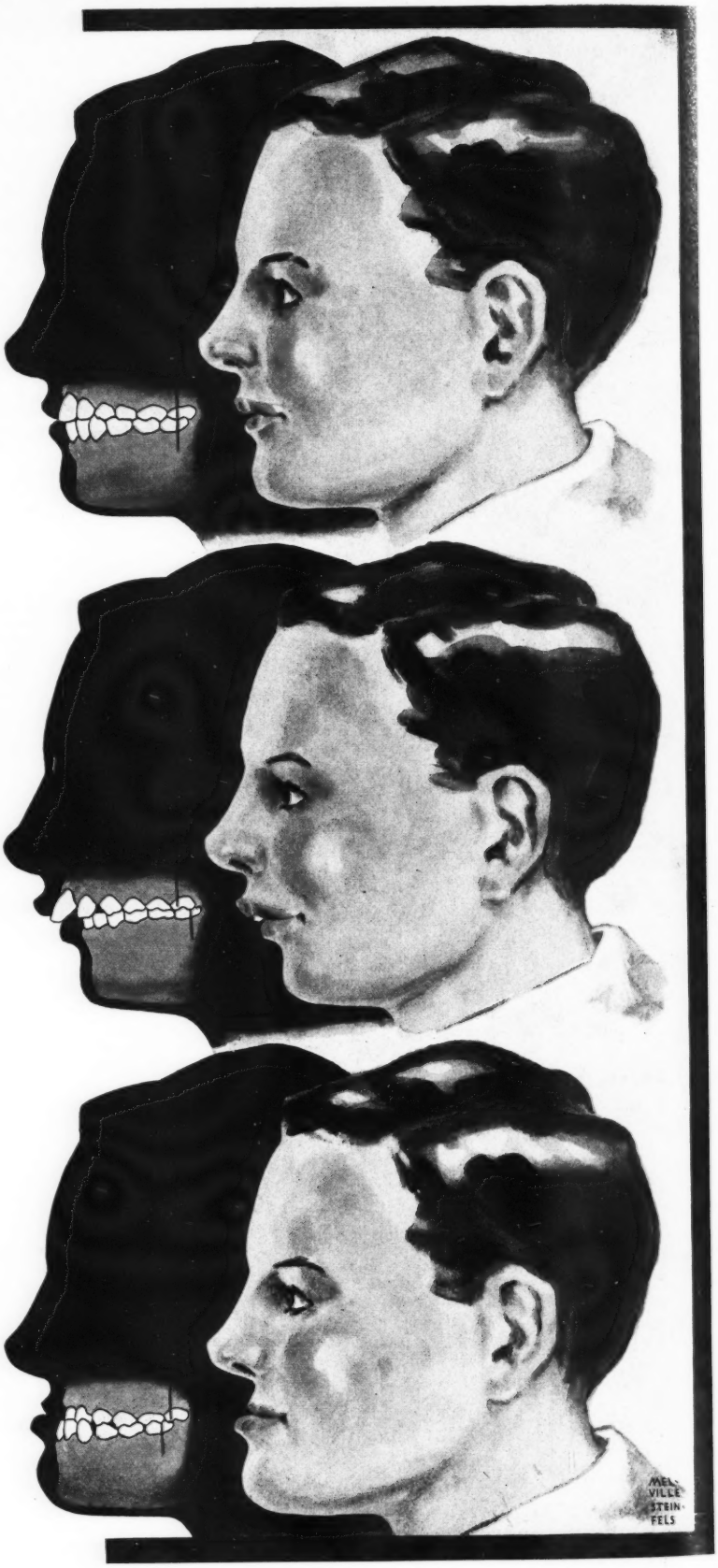
WILLIAMS

THE EDUCATION OF THE DENTAL PATIENT

II. HOW IRREGULARITIES OF THE TEETH AFFECT THE FACE*



Top: A normal face and normal relationship of the teeth.

Center: Class II Malocclusion, (Angle Classification).

Bottom: Class III Malocclusion.

Class II malocclusion is characterized by what is commonly considered a receding chin with protruding upper front teeth. Often, however, the difficulty lies in the upper arch rather than in the lower, with the upper teeth in a forward position to normal rather than the lower teeth being in a backward position to normal.

CAUSES: Thumb and finger sucking, mouth breathing, enlarged adenoids and tonsils, lip biting, face propping, use of pacifiers, muscular inactivity.

Class III malocclusion is characterized by a too prominent chin in relation to the remainder of the face. The lower front teeth and usually the back teeth show a similar relation. The bony structure of the lower jaw is usually overdeveloped; that of the upper jaw, underdeveloped. As a rule the tongue drops to the floor of the mouth when in resting position. Enlarged adenoids and tonsils and associated mouth breathing are often found in connection with this deformity.

CAUSES: Imitation, pillowing habits in sleeping positions, abnormal tongue and swallowing habits, thrusting lower jaw forward in cases of enlarged tonsils.

RECOMMENDATION: Disfiguring facial conditions can be corrected by orthodontic treatment.

*** This is number two in the second series of charts intended for the use of the dentist in explaining important normal and pathologic dental conditions to his patients. The first series is now available in booklet form.**

The DENTAL DIGEST

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JUDICIOUS EXTRACTION IN THE TREATMENT OF MALOCCLUSION

SAMUEL FINE, D.M.D.
Fitchburg, Massachusetts

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EDITOR'S NOTE: Impartial journalism requires that facts be looked squarely in the face and that preconceptions and traditions be set aside in the analysis of any problem. Honest journalism likewise demands that no deaf ear be turned to anyone who comes bearing a new message, provided in the case of biologic problems the observations and results reported or the technique described are logically possible, that demonstrable proof is presented and that the author is responsible.

It is widely known that thousands of cases of malocclusion go untreated because of economic reasons. It is also generally accepted that in the treatment of malocclusions by regulating appliances it is seldom necessary to extract teeth. There are, however, thousands of children, some indigent, and others inaccessible to orthodontists who cannot be given the advantage of orthodontic care. Doctor Fine, therefore, describes a technique which is NOT a substitute for orthodontic treatment but a stop-gap of necessity.

The ideal condition is for every child suffering from malocclusion to receive skillful orthodontic attention and every dentist should so inform parents of such children. To do less is a serious professional dereliction.

We present this article by Doctor Fine expecting that some orthodontists may criticize us severely. If, however, one single child should be benefited by this type of treatment, and none injured, we will feel justified in presenting this technique to the profession. *We wish to warn readers again that this treatment even in properly chosen cases is intended only in those cases in which orthodontic treatment is not possible to obtain.*

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THE purpose of this paper is to present a practical phase in the treatment of malocclusion; namely, that of judicious extraction. The treatment of this subject is based on clinical experience and observation over a period of about fifteen years. It is by no means new. In fact, this method was practiced before the time of Fauchard. Then, in 1888, it was recommended by Farrar and Kingsley. Today, it is being advocated by orthodontists in this country, Canada, Sweden, and England.

On the subject of malocclusion, Farrar[1] said:

> That which seems best for the permanent benefit of the patient should be the aim of the operator. Of course, this leaves room for diversity of opinion, possibly to mistakes, but that does not alter the fact that freedom of judgment is quite likely to lead to better average results, than would the adoption of fixed rules . . . Mistakes will probably occur; but the fixed maxims of hobbyists paralyze reason and judgment, and cause at least as many errors as would result from independent decisions.

Mershon,[2] too, is against a fixed method. He says, "Simply moving teeth to their supposed normal places is not all of orthodontia . . . Today, there is as much harm done by the use of orthodontic appliances as there is good." In 1908, Calvin Case began to modify his method of treatment, advocating the removal of bicuspids in bimaxillary protrusions, for which he was severely criticized. While I appreciate the fact that good results have been obtained in many cases with the use of appliances alone, nevertheless I propose to deal entirely with a discussion of results obtained (1) when extraction was the only treatment and (2) when extraction was supplemented by the use of appliances.

ETIOLOGY OF MALOCCLUSION

Unfortunately, we are not definitely informed concerning the causes of malocclusion; therefore, the treatment of malocclusion must remain in more or less a research stage until such time as we can fully understand and definitely establish all factors entering into its etiology. For instance, we have always believed that mouth breathing was a predisposing cause of malocclusion, but in his extensive work on the effect of hormones, Howard[3] says:

> (1) The etiology of growth anomalies of the jaw and dental arches remains unexplained; (2) muscular influences are not as potent as is now believed. If so a total of 159 mouth breathers would show more than 22 cases with Class II division deformity, (3) the open mouth is not a positive factor in protruding Class II division 1 cases.

He further points to ninety-four cases of normal jaws and occlusion in 159 cases of mouth breathers. Following this, Clarke[4] commented, "I was taught so long and read so much in support of the statement that mouth breathing was a predisposing cause of Class II division 1 cases that it is hard to forget these theories."

BENEFITS OF EXTRACTION TREATMENT

A conservative on extraction in orthodontic treatment may consider this presentation radical; however, I recommend that this subject be given careful and unbiased consideration. The percentage of successful results obtained in my practice, owing to the adoption of the method I am advocating, is far greater than that obtained through the sole use of orthodontic appliances. Orthodontia is not a limited question of appliances, and it is, therefore, my opinion that when an esthetic, efficient, and functional occlusion can be obtained through an extraction, then extraction should be given preference even in the cases in which appliances alone can actually bring about the same result.

The benefits to be derived by judicious extraction are numerous:

1. Extraction will greatly reduce and, in many instances, eliminate the use of appliances and retainers. The advantage thus gained is too obvious to be discussed.
2. Extraction will reduce the time of treatment immeasurably. In this instance, both the dentist and patient will be relieved of tedious, drawn out procedure.
3. The expense to the patient will be decreased. Many parents are unwilling or unable to finance a long course of treatment, and this procedure will reduce the expense considerably, sometimes making it almost negligible.
4. It will stir up interest in the general practitioners themselves. The majority of even skillful practitioners hesitate to undertake orthodontic treatment for many children who are in real need of it, or who may derive benefit from this treatment; moreover, the general practitioner dislikes this phase of dentistry.
5. If extraction will simplify orthodontic treatment in many cases, it may encourage the general practitioner to do some research work along orthodontic lines. This, in turn, may help us to understand the etiology of malocclusion better and will greatly simplify and help standardize our methods of treatment.

PRACTICAL RESULTS AND RELAPSES

To cite my own experience, shortly after I began practice, in which I

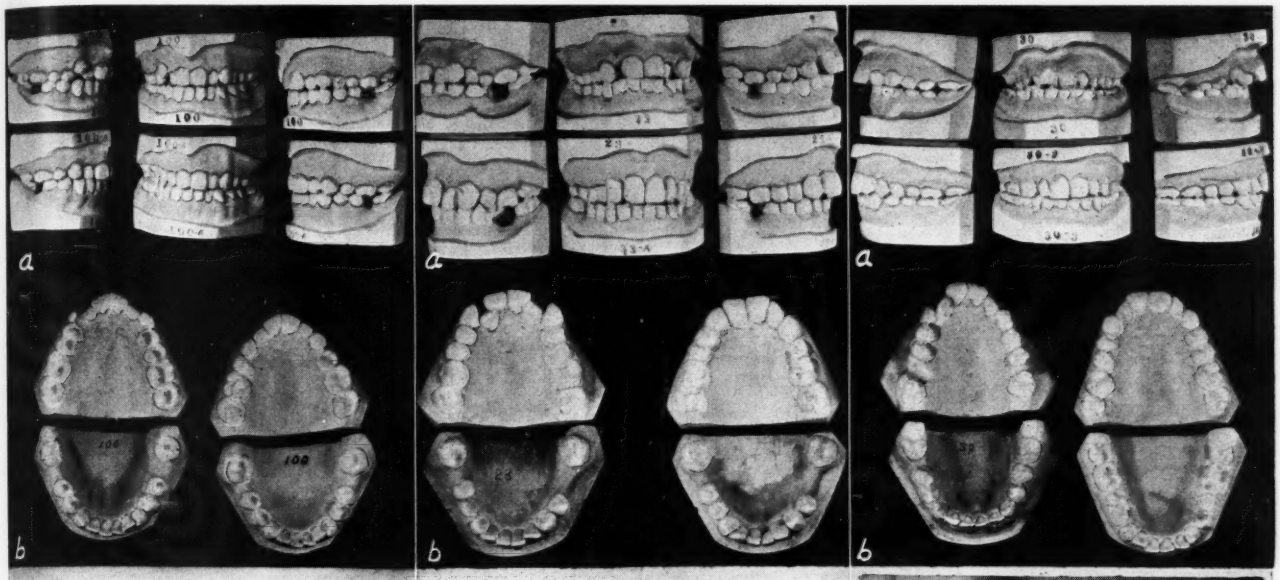
1 Farrar, J. N.: Irregularities of the Teeth and Their Correction, volume 1, 1888, page 687.

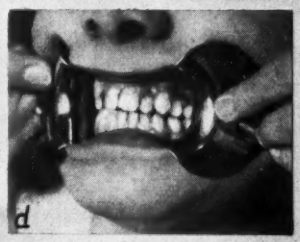
2 Mershon, J. V.: Orthodontia and Its Relation to Dentistry, Dental Cosmos, 72: 1294, 1298, 1293 (December) 1930.

3 Howard, Clinton: Etiology of Growth Anomalies, J. A. D. A. 19:648 (July) 1932.

4 Clarke, W. S.: Discussion, J. A. D. A. 19:649 (July) 1932.

Case 1 Case 2 Case 3





Case 1—Fig. 1A—Patient, aged 13. Upper casts show right side, front view, and left side before treatment. Lower casts show same case one year and six months after treatment. Upper right and left first bicuspids were extracted. No orthodontic appliances of any kind were used.

Case 1—Fig. 1B—Occlusal view of the same case before and after treatment.

Case 1—Figs. 1C and 1D—Photographs of the same case before treatment.

Case 1—Figs. 1E and 1F—After treatment.

Case 2—Fig. 2A—Patient, aged 18. Upper casts, right, front, and left sides before treatment. Lower casts, right, front, and left sides six years later. Upper right lateral and upper left first bicuspid were extracted. No appliances were used.

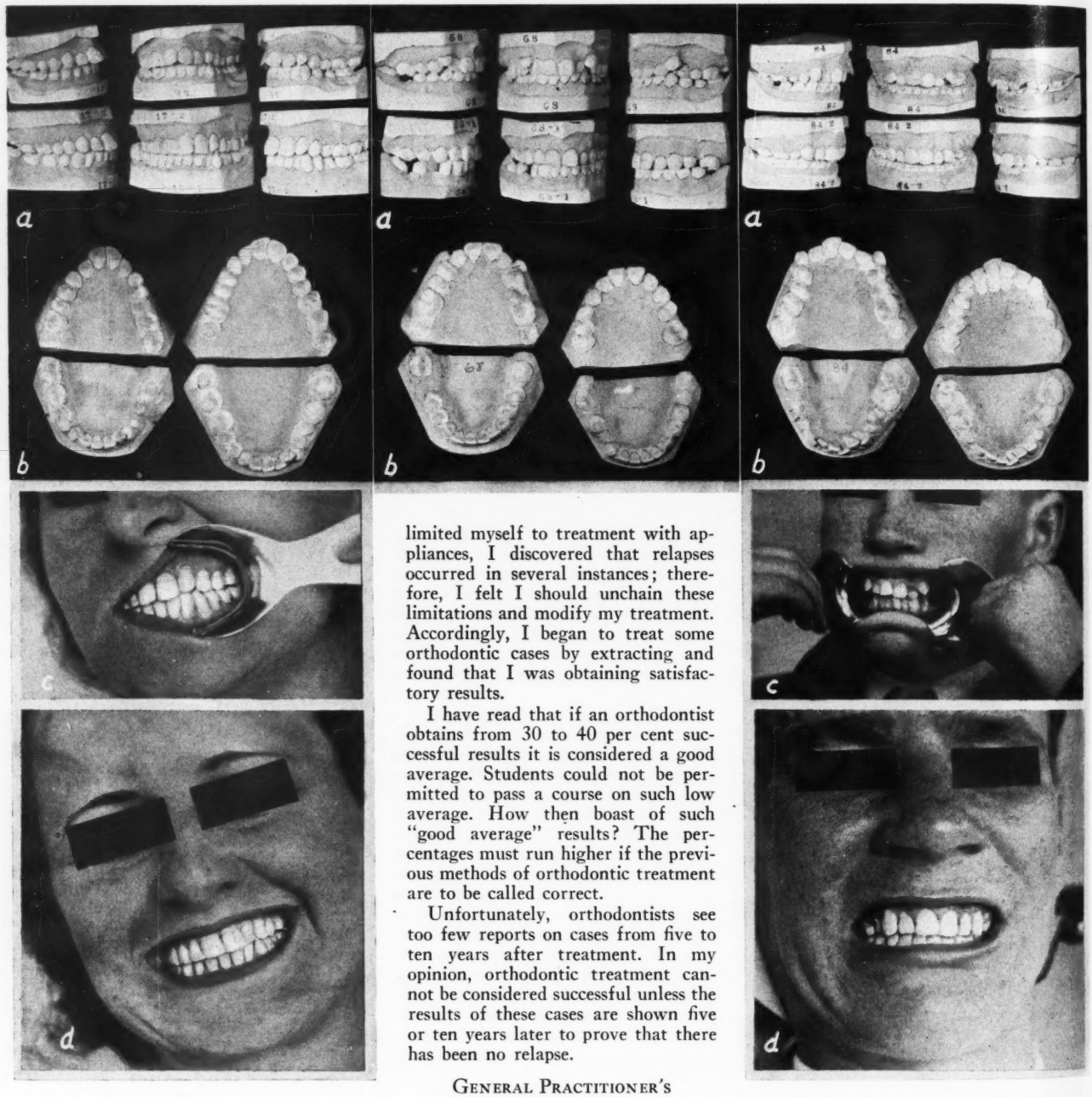
Case 2—Fig. 2B—Occlusal view, same case. Left side, before treatment; right side, after treatment.

Case 3—Fig. 3A—Patient, aged 13. Upper casts, right, front, and left sides before treatment. Lower casts, right, front, and left sides eleven years later. All three first permanent molars had been previously extracted. Advised extraction of the fourth first permanent molar. Appliances were used for eight months.

Case 3—Fig. 3B—Occlusal view before treatment and eleven years after treatment.

Case 3—Figs. 3C and 3D—Twelve years after treatment.

Case 4 Case 5 Case 6



limited myself to treatment with appliances, I discovered that relapses occurred in several instances; therefore, I felt I should unchain these limitations and modify my treatment. Accordingly, I began to treat some orthodontic cases by extracting and found that I was obtaining satisfactory results.

I have read that if an orthodontist obtains from 30 to 40 per cent successful results it is considered a good average. Students could not be permitted to pass a course on such low average. How then boast of such "good average" results? The percentages must run higher if the previous methods of orthodontic treatment are to be called correct.

Unfortunately, orthodontists see too few reports on cases from five to ten years after treatment. In my opinion, orthodontic treatment cannot be considered successful unless the results of these cases are shown five or ten years later to prove that there has been no relapse.

General Practitioner's Advantage

In follow-up opportunities the general practitioner has an advantage. When a general practitioner treats an orthodontic case he may determine from observing his patient over a period of many years whether the final result is successful or not. In an editorial which appeared recently the editor[5] lauds clinical experience with these words:

Many cases are considered discharged, as being treated long before the necessary

[5] Pollack, H. C.: Editorial, Internat. J. Ortho. Oral Surg. & Radiog. August, 1932.

Case 4—Fig. 4A—Patient, aged 13. Upper casts show right side, front view, and left side. Lower casts show same case nine years later. Upper left lateral was extracted. Appliances were used for one year.

Case 4—Fig. 4B—Occlusal view before and after treatment.

Case 4—Figs. 4C and D—Nine years after treatment.

Case 5—Fig. 5A—Patient, aged 13. Upper casts show right side, front, and left side. Lower casts show same case five years later. Upper right and left first bicuspids were extracted. No appliances were used.

Case 5—Fig. 5B—Occlusal view before and after treatment.

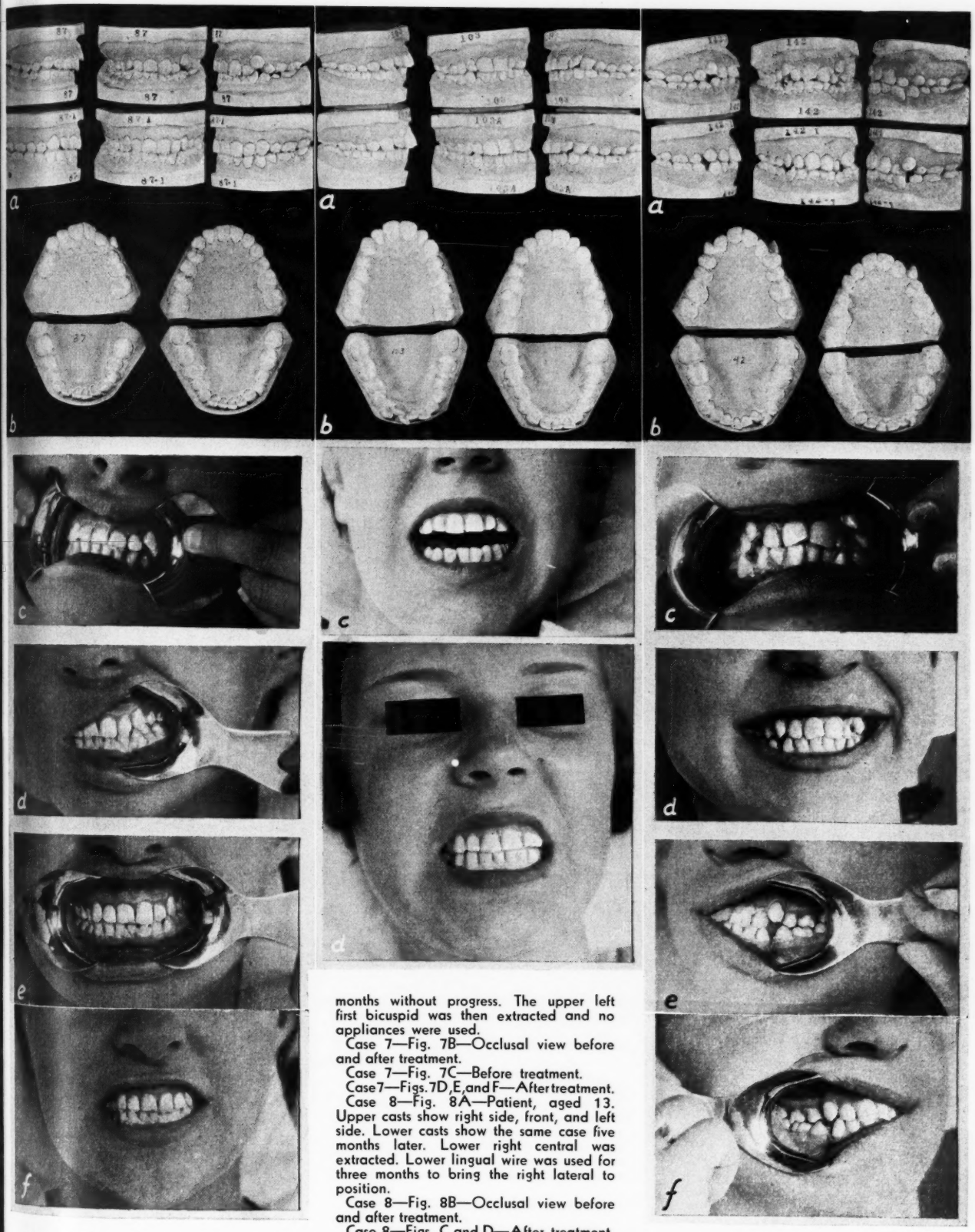
Case 6—Fig. 6A—Patient, aged 12. Upper casts show right side, front, and left side. Lower casts show same case four years and five months later. Upper right and left first bicuspids and lower left second bicuspid were extracted. No appliances were used.

Case 6—Fig. 6B—Occlusal view before and after treatment.

Case 6—Fig. 6C—Before treatment.

Case 6—Fig. 6D—Four years and five months after treatment.

Case 7 Case 8 Case 9



Case 7—Fig. 7A—Patient, aged 13. Upper casts show right side, front, and left side before treatment. Lower casts show same case four years and three months later. Appliances were used for four months without progress. The upper left first bicuspid was then extracted and no appliances were used.

Case 7—Fig. 7B—Occlusal view before and after treatment.

Case 7—Fig. 7C—Before treatment.

Case 7—Figs. 7D, E, and F—After treatment.

Case 8—Fig. 8A—Patient, aged 13. Upper casts show right side, front, and left side. Lower casts show the same case five months later. Lower right central was extracted. Lower lingual wire was used for three months to bring the right lateral to position.

Case 8—Fig. 8B—Occlusal view before and after treatment.

Case 8—Figs. C and D—After treatment.

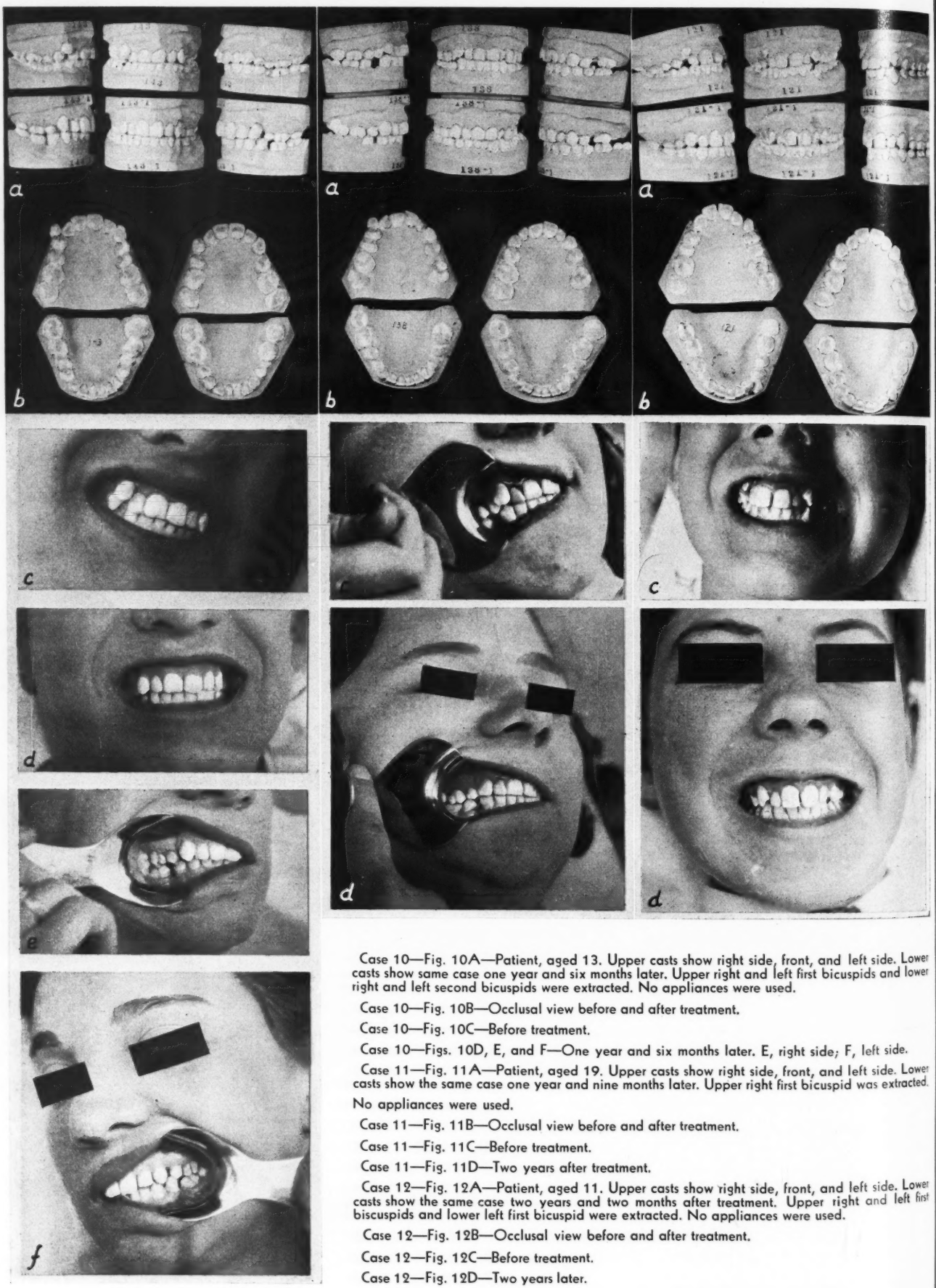
Case 9—Fig. 9A—Patient, aged 14. Upper casts show right side, front, and left side before treatment. Lower casts, one year and six months later. All four first bicuspids were extracted. No appliances were used.

Case 9—Fig. 9B—Occlusal view before and after treatment.

Case 9—Fig. 9C—Before treatment.

Case 9—Figs. 9D, E, and F—One year and six months later. E, left side; F, right side.

Case 10 Case 11 Case 12



Case 10—Fig. 10A—Patient, aged 13. Upper casts show right side, front, and left side. Lower casts show same case one year and six months later. Upper right and left first bicuspids and lower right and left second bicuspids were extracted. No appliances were used.

Case 10—Fig. 10B—Occlusal view before and after treatment.

Case 10—Fig. 10C—Before treatment.

Case 10—Figs. 10D, E, and F—One year and six months later. E, right side; F, left side.

Case 11—Fig. 11A—Patient, aged 19. Upper casts show right side, front, and left side. Lower casts show the same case one year and nine months later. Upper right first bicuspid was extracted. No appliances were used.

Case 11—Fig. 11B—Occlusal view before and after treatment.

Case 11—Fig. 11C—Before treatment.

Case 11—Fig. 11D—Two years after treatment.

Case 12—Fig. 12A—Patient, aged 11. Upper casts show right side, front, and left side. Lower casts show the same case two years and two months after treatment. Upper right and left first biscuspids and lower left first bicuspid were extracted. No appliances were used.

Case 12—Fig. 12B—Occlusal view before and after treatment.

Case 12—Fig. 12C—Before treatment.

Case 12—Fig. 12D—Two years later.

age of maturity, only to have them return, years later, relapsed. This sad affair in many cases is responsible for the denouncement of the system of treatment used, and marks the birth of a new one. It follows then that clinical experience becomes one of the best instruments at our disposal.

There is no law at present which prohibits any dentist from practicing orthodontia. Orthodontia should never be divorced from general dentistry, because both subjects are so closely related that it is hard to distinguish between the end of one and the beginning of the other.

Orthodontia is not a limited question of appliances, but has a definite biologic concept, for we are dealing with the growth and development of living tissue. Mershon[2] asserts that:

Observation over many years led the general practitioner to advise against orthodontic treatment until all the permanent teeth were in place. He had seen many cases which appeared to be malocclusion prove to be only a stage in development. Apparent cases of malocclusion would develop into functional dentures without any orthodontic treatment.

Advisability of Orthodontic Treatment

Practical experimentation and results have taught me that we should first strive to determine the advisability of orthodontic treatment in any given case and then try to use mechanical appliances as little as possible. Therefore, I recommend that the following questions be answered in every instance before orthodontic treatment is undertaken: (1) Will the patient remain comfortable without any orthodontic treatment at all? (2) Will the case become worse if left untreated? (3) Will a careful examination of the patient and a study of his family history reveal that he will be subject to periodontoclasia? (4) Is the patient easily susceptible to caries? (5) Does past experience point to relapse, when appliances were used in a similar case? (6) Is it justifiable to extract certain teeth in order to give the patient an esthetic and functional occlusion?

Noteworthy Opinions

In 1928, Badcock[6] said:

The aim of the orthodontist should be the preservation of the thirty-two teeth in normal occlusion but it is an ideal which cannot always be maintained, nor is its attainment always worth the sacrifices it may entail. Normal occlusion will not be restored (by extraction), but the result will be functionally and esthetically satisfactory. The principles which govern its practice should be understood by every orthodontist, and studied and taught in every orthodontic school.

Doctor Maxwell-Stephens,[7] in discussing Badcock's article, added:

There are many cases that have large teeth and small arches and I have felt even at an early age that I should have to extract later on in spite of the expansion and the use of muscle exercises. They will not expand, and you cannot get an esthetic appearance in a child with a short upper lip and big teeth. The esthetic eye revolts from it. I have seen it, I have done it, and it is absolutely wrong. I have had to go back on my tracks and extract later on. I have adopted Angle's treatment or rather his principles and have to admit that they failed and it is a great disappointment.

On the subject of extraction, Chapman[8] contends:

Angle's students were so greatly influenced by him that it is rare to find in the writings of any of them advocacy of extraction; some are as opposed to extraction as Angle was. Nonextraction has been so vigorously expounded in the United States that it is accepted by a large public. The theory of nonextraction has little or no scientific basis, but there are strong common sense reasons for extraction.

In 1929, Hawley[9] asserted, "It becomes a matter of judgment and experience to determine where treatment, by moving the whole denture backward, and where the treatment of cases by removing the first premolars, should be used." On these types of cases Grieve[10] affirms, "The use of intermaxillary elastics, in conjunction with the lingual wire upon the mandibular teeth, is, in my belief, absolutely wrong, and has been responsible for failure in many cases belonging to Angle's Class II . . . Had I removed four premolars, the treatment would have been completed in half the time, and the result would, doubtless, have been very satisfactory." He states further that he is now removing four bicuspids in a large percentage of cases despite the fact that he was a product of Angle's school, because he finally decided that Angle's method could not always be worked successfully.

Recommendations

It is not my purpose in presenting this subject to propose any fast rules governing the extraction of teeth, because it might lead to misunderstandings. I will, however, point out the cases in which I thought extraction was indicated. It is the reader's privilege to draw his own conclusions.

We have no definite proof that in cases of Angle's Class I (neutroclusion) in which the anterior teeth are large, crowded, and rotated, the treatment is the expansion of the arch to accommodate all the teeth. Why not contraction of the arch if it will give an esthetic appearance and an efficient occlusion?

I do not advise the extraction of the superior central incisors. I have never extracted any cuspids for the correction of malocclusion. I have, however, extracted other teeth with gratifying results.

The accompanying illustrations show cases in which the extraction of laterals and of bicuspids has given splendid results, and esthetics have in no way been impaired. They also show cases in which the first molars have been extracted in cases of distoclusion, satisfactory results having been obtained. In these Angle's Class II (distoclusion) cases, however, I am not prepared to state whether the results have been due to the extraction exclusively.

Conclusion

I wish to reiterate that the treatment of malocclusion by extraction is not a new method. I would also like to have it clearly understood that I use and advocate the use of appliances when they are indicated. So gratifying have been the results and so high a percentage of successful results have been obtained in extraction alone or when extraction has been supplemented by the use of appliances, rather than in the use of only appliances, that so far as I am concerned, I am satisfied to continue with this method of treatment.

6 Badcock, J. H.: The Place of Extraction in Orthodontic Treatment, Proc. First Internat. Ortho. Cong., St. Louis, C. V. Mosby Company, 1927, page 402.

336 Main Street.

7 Maxwell-Stephens: Discussion, First Internat. Ortho. Cong., 1927, page 409.

8 Chapman, Harold: Orthodontics, Extraction As a Part of Treatment, Internat. J. Ortho. Oral Surg. & Radiog. 18:581 (June) 1932.

9 Hawley, C. A.: Treatment of Distoclusion, Internat. J. Ortho. Oral Surg. & Radiog. 16:139 (February) 1930.

10 Grieve, G. W.: Orthodontic Diagnosis, Internat. J. Ortho. Oral Surg. & Radiog. 18:929 (September) 1932.

DISPLACED ROOTS IN MAXILLARY SINUS

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THE problem of the root that has accidentally been displaced into the maxillary sinus is one of those difficult situations which may present itself during the course of years to any operator who concerns himself with the responsibility of removing teeth. One need only review the anatomic relationship of the maxillary sinus to the teeth of the upper jaw to understand why scores of roots are forced into this chamber each year.

The maxillary sinus varies enormously in size and shape in different persons. It is therefore incumbent on us to take a roentgenogram of the upper posterior teeth before operation to determine their relationship to this structure inasmuch as this relationship may have considerable bearing on the operative technique. It is axiomatic that more accidents will occur when we are not aware of the presence of an abnormally formed sinus. It is useless to speak of "normal" or "average" sinuses. Blindly to extract the root of an upper molar on the assumption that the sinus is "normal," is to invite disaster. It is well to remember that the sinus may vary in size from a small, single-chambered hollow lying well above the apexes of the bicuspids and molars to a huge, multichambered concavity extending from the lateral incisor back to the third molar and dipping below the apexes of all the upper teeth. With such great variations possible and even usual, it is obvious that roentgenograms are indispen sable aids in treating these areas.

There are a number of ways in which a root may be inadvertently displaced into the sinus. Misapplied force is the responsible factor in the majority of instances. It is not alone undue upward stress, however, which will cause displacement. On the contrary in many instances the lighest pressure may force the root fragment through the thin Schneiderian membrane. In cases of this type the dentist will often report that the root disappeared into the sinus while he was exploring the socket with a pair of tweezers. It is not the amount of stress so much as the direction of the stress that is most significant. A sound principle of good oral surgery is to apply *no direct upward force* against a root that lies in close proximity to the maxillary sinus.

Once a root has been displaced into the sinus, a definite operative procedure must be followed to effect its removal successfully. Half-hearted measures are both ineffective and harmful. The five essential factors for successful surgery in this region are: (1) careful, thorough roentgenographic studies of the displaced root; (2) absolute sterility of all instruments entering the sinus; (3) preservation of all soft tissue; (4) preservation of as much of the buccal and lingual plates of bone as possible; and (5) enlargement of the original opening into the sinus.

1. Roentgenograms taken from various angles will reveal the size and position of the root and its relation to the surrounding structures.

2. The sinus is naturally a sterile cavity in contradistinction to the mouth which is naturally a contaminated area. We all know that in ordinary mouth surgery we can occasionally contravene the laws of asepsis and "get away with it." When operating in the sinus, however, the chances of preventing infection unless rigid asepsis is maintained are remote. If we triumphantly remove a root from the sinus and set up in its stead an acute empyema, we are jumping from the frying pan into the fire.

3 and 4. The preservation of all the soft tissue and as much of the buccal and lingual plates of bone as is possible is essential to prevent the formation of a permanent opening from the mouth into the sinus. As was stated previously, these two cavities, one sterile and the other unclean, were never intended by Nature to be in communication. If such communication does exist, it must be eliminated either surgically, by a plastic transposition of soft tissue from the palate, or mechanically by some artificial appliance.

5. The last point about enlarging the opening made by the root is worthy of mention only because, although obvious, it is frequently overlooked. While it may seem logical to expect a root to be brought down through an opening which was large enough to admit it in the first place, in practice this can never be successfully managed. The opening must be enlarged sufficiently to admit the passage of a canula and the widest diameter of the root.

Technique

1. A broad flap is reflected, the mucous membrane and periosteum being carefully preserved. Every effort must be expended to prevent undue traumatization of this tissue.

2. With bone rongeurs all septal tissue is removed. The lower border of the buccal plate is then trimmed away to permit better vision and improved access.

3. A large surgical bur is introduced into the socket and an adequate section of the bony floor of the sinus is cut away (Fig. 1). The size of the opening will naturally vary, depending on the size of the root. It is wiser to have too large an opening than one too small. On the other hand there is no point in destroying an unnecessarily extensive area of bone.

With a sound operative foundation, by which is meant a good flap and an adequate point of entrance, removal of the root is a comparatively simple procedure. Many men have suggested various techniques, some more effective than others. Any technique that avoids instrumentation in the sinus proper is to be commended. The Schneiderian membrane is extremely sensitive tissue and should not be subjected to useless trauma. One of the oldest and perhaps the best techniques is as follows:

4. A large irrigating can is filled with a quart of sterile, physiologic solution of sodium chloride. A small canula is introduced into the sinus and with the irrigating can held high overhead, the solution is permitted to wash through the sinus (Figs. 2 and 3). The patient's head is held well forward and the patient warned not to swallow. The wash from the sinus is caught in a basin held beneath the patient's chin. The operator should observe closely the wash as it emerges from the sinus. The root as it issues in the wash will be seen momentarily as a flash of white. Often

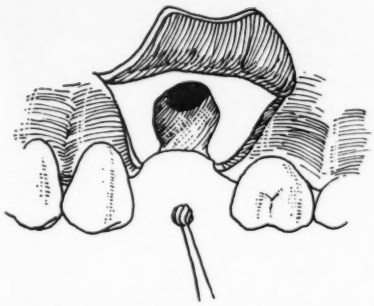

Fig. 1—Size and type of flap, showing lower border of buccal plate removed. Dark area indicates amount of bone removed with surgical bur.

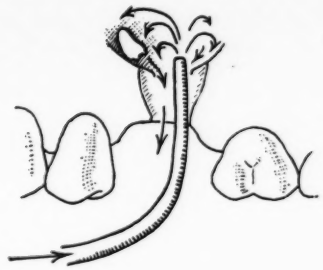

Fig. 2—Canula introduced along the distal wall of the opening and projecting slightly into the sinus. Arrows indicate the direction of the flow of the physiologic solution of sodium chloride.

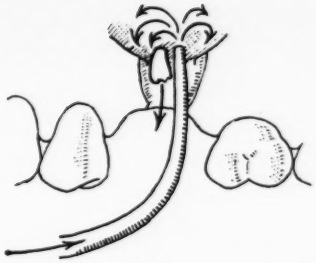

Fig. 3—The current of the solution is shown sweeping the retained root toward the opening created. The apex can be seen passing into the mouth.

it will take some time for the root to wash out. Before the contents of the full pus basin are discarded, every clot of blood should be examined to be certain that the root is not caught in the meshed fibrinous material. Patience and care in following this technique of removal will be successful in the majority of cases. It will result, too, in the lowest percentage of postoperative complications.

5. The soft tissue is now replaced and sutured into position (Fig. 4). A small drain should be changed every forty-eight hours and the sinus irrigated with warm physiologic solution of sodium chloride. An irrigation can and not the ordinary syringe should be used. As the granulations form, the opening from the mouth into the sinus will be slowly closed until complete healing has ensued.

Variations of Normal Displaced Roots

The purpose of this article is to outline the technique of removal in uncomplicated, simple cases. The majority of cases fall into this category. There are, however, several variations from these normal cases which must be understood. We will merely indicate at the present some of those most commonly seen.

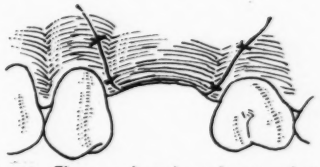

Fig. 4—Flap replaced and sutured into position. A small drain is inserted which does not enter the sinus proper.

1. The apex which has been displaced from its socket into the cancellous bone around it, is not uncommon. Such displacement may occur buccally, lingually, mesially, or distally. In these cases the root may appear to be in the sinus in the roent-

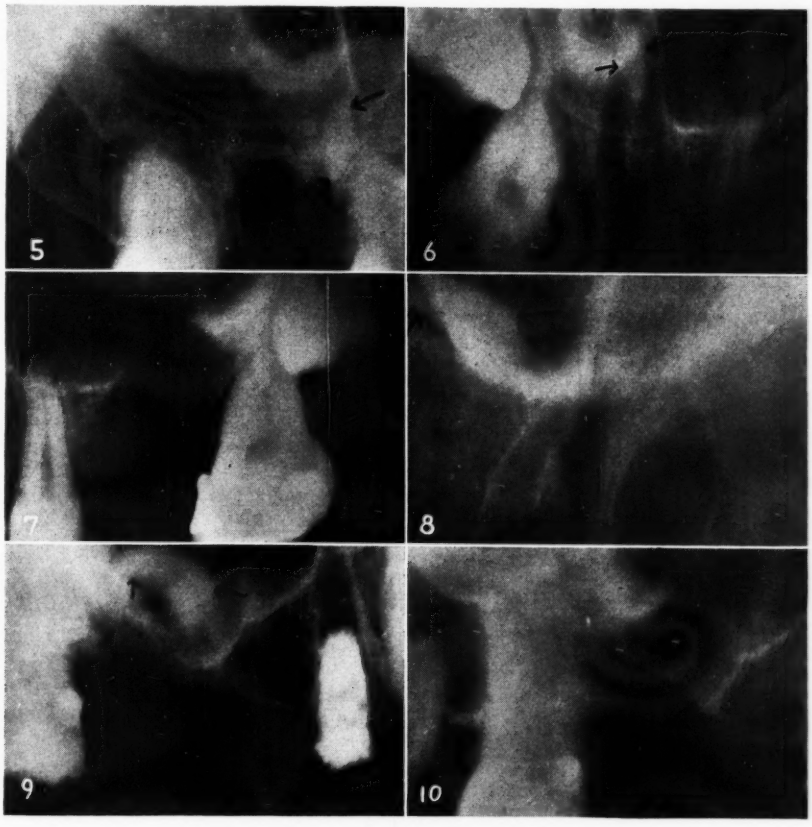

Fig. 5—Apex of second molar which has been forced into sinus and has migrated forward along the floor of the sinus.

Fig. 6—A low, extensive sinus reaching from the cuspid to the third molar region. Mesio-buccal apex has been forced into chamber.

Fig. 7—Postoperative view showing opening into sinus; the root has been removed.

Fig. 8—A high sinus into which the lingual root of the first molar has been displaced. In view of the size of the root and the position of the sinus, the Caldwell-Luc approach through the canine fossa is the operation of choice.

Fig. 9—A low sinus into which root was forced during manipulation with ordinary tweezers. The shadow in the bicuspid socket is cast by a sedative paste placed there.

Fig. 10—Postoperative view showing root removed. Note how alveolar bone along the ridge has been preserved to prevent the formation of a permanent opening from the mouth into the sinus.

genogram but in reality it is not.

2. The second type is the one that has been displaced toward the sinus but has not actually perforated the Schneiderian membrane. The root is caught between the bony floor of the sinus and the lining membrane of the sinus. Here, too, roentgenograms appear to show the apex in the sinus.

3. Occasionally a case is encountered in which the roentgenograms fail to reveal the presence of the apex. It should never be assumed that there is no root present because roentgenograms taken from every possible angle fail to reveal one.

In certain cases, variations in the operative technique are indicated. The Caldwell-Luc operation with its minor variations is frequently the operation of choice.

130 Market Street.

THE PAINFUL SOCKET AND ITS TREATMENT

WALTER H. JACOBS, D.D.S.
New York

THE painful or dry socket after tooth extraction is an inflammation and exposure of the alveolar bone that covers the root of the tooth. It may be an alveolitis resulting from a low grade infection or severe pain due to external stimuli acting upon the exposed nerves of the alveolar bone; usually it is a combination of the two causes.

Symptoms—A continuous, dull, neuralgic pain, at times severe enough to interfere with normal sleep and rest; and extreme tenderness in and about the socket.

Appearance—(1) The socket has the brownish-gray color of exposed bone; (2) it is partly filled with tissue detritus, sloughing bone, broken-down blood clot, and food; (3) edges of soft tissue may be lacerated especially on the palatal and buccal surfaces; (4) the socket may be loosely covered by overhanging flaps of the soft tissues; (5) usually an offensive odor is present.

Causes—(1) Excessive trauma and instrumentation; (2) preexisting osteitis; (3) introduced septic infection; (4) "burnishing" action against alveolar walls of hypercementosed roots; (5) tight packing of socket, instead of light dressing; (6) foreign bodies in socket; (7) improper technique of administering local anesthesia: (a) too rapid injection; (b) too high content of epinephrine; (8) low individual resistance at time of operation; (9) loss or nonformation of a blood clot in the socket immediately after extraction, owing to (a) saliva washing into socket; (b) repeated rinsing immediately after extraction; (c) suction about socket; (d) patient inserting tongue; (e) any of the causes enumerated from 1 to 8.

124 West Ninety-Third Street.

I believe that the fundamental cause of the painful socket is the *lack of formation and retention of a healthy blood clot.* This natural formation protects the exposed alveolar bone, prevents contamination from oral bacteria or food, and serves as a scaffold for the growth of blood vessels and fibrous tissue making up the granulation tissue that repairs the wound.

TREATMENT

1. Anesthetize locally.
   (a) Block or infiltration (not in inflamed area).
   (b) Immediately relieves pain.
   (c) Allows treatment to proceed without undue suffering of patient.
2. Take a roentgenogram of the socket.
3. Look for and remove:
   (a) Spicules of process; broken pieces of filling or tooth.
   (b) Sharp alveolar margins, which should be trimmed.
   (c) Carious teeth, teeth with dying pulps, or other pathologic conditions, which may be referring pain to the socket.
4. Irrigate socket with warm potassium permanganate solution (1/1000) for about five minutes:
   (a) To remove loose tissue and food particles.
   (b) To soothe irritated exposed nerve endings.
   (c) To inhibit the growth of the fusiform bacillus and Vincent's spirochete so often found in these painful sockets.
   (d) To encourage lymph drainage.
5. Insert short dressing of iodoform gauze dipped in eugenol.
   (a) Place deep in socket.
   (b) Do not pack or cause trauma.
6. Cover socket with ZnO-Eugenol cone.
   (a) Mix ZnO-Eugenol to paste consistency.
   (b) Roll to cone shape and insert in socket.
   (c) Cover the entire orifice of the socket.
   (d) Dry outer portion of cone with cotton and zinc oxide powder.
7. In forty-eight hours remove the ZnO-Eugenol cover and the gauze dressing and irrigate again with warm potassium permanganate, and once more apply the ZnO-Eugenol paste. In a few days the socket will start to heal from the apical region upward, and in about five days the ZnO-Eugenol plug may be dispensed with altogether.

This covering of ZnO-Eugenol prevents external stimuli, such as food, air, heat, cold, and suction from irritating the exposed nerve endings in the alveolar bone. It also allows proper healing and absorption to take place in the socket. The ZnO in the combination is the Zinci Oxidum, U. S. P., a fine, white powder, without odor or taste. The essential oil eugenol is an anodyne and mild antiseptic. The ZnO-Eugenol paste is the combination resulting from a mixture of these two nonproprietary drugs.

If the treatment outlined here is carried out successfully, the patient should be relieved of pain with the injection of local anesthesia, for by the time the anesthesia has worn off the action of the ZnO-Eugenol plug will have become effective.

WHAT THE DENTIST SHOULD KNOW ABOUT THE LAW

JOHN H. NESSON, D.M.D.
Boston

(Continued from September Issue)

Checks in Payment

The question often arises in the mind of the dentist as to whether a check sent by a patient marked "Payment in full" discharges the debt if the check is for an amount less than the bill. Must the dentist return the the check and run the risk of losing the entire debt, or may he cash it and apply the proceeds on account, and hold the debtor for the balance? The laws of the various jurisdictions differ on this question and what may be the law in one state would be in direct conflict with the law in another.

In some jurisdictions it has been held that to accept and apply the check on account is not accord and satisfaction, if the creditor notifies the other party that he is not accepting it as full satisfaction but merely on account.

The general rule prevailing in this country is that a check "in full" or given under the expressed condition that it shall cancel the liability, will discharge the debt. However, that rule applies only to those cases in which the amount due is in dispute. If the amount is *due* and *undisputed* a check for less than the full amount, even though marked "Payment in full" will *not* discharge the debt.

A receipt for money may always be explained in court. Often a patient offers a sum of money less than the amount due and requests a receipt in full. If you give the patient a receipt *signed* "paid in full" that discharges the debt. However, if you will be careful to mark the receipt "on account," or just sign a receipt for the sum received without designating "in full," that will not bar you from collecting the balance.

While we are on the subject of checks, a word of caution about accepting checks from strangers or giving them change when the check is larger than the bill for services. It would seem almost superfluous to give this advice in view of the common knowledge of the frauds perpetrated by means of "rubber" checks. Remember that today also, the check may have been good, but the bank may not be.

Now a word of caution about prompt cashing or depositing of checks received from patients. In a legal sense, a check is a promisory note because it is not money, but only a promise to pay. While the laws governing bills and notes permit the unlimited endorsement and transfer of promisory notes, a check is more restrictive. The law in every jurisdiction says that a check must be presented for payment within a reasonable time. What is a reasonable time may vary in the minds of the courts in the various jurisdictions.

In Massachusetts the courts have ruled that where the debtor, creditor, and payee (bank) are all in the same city, the check matures on the day after delivery and is overdue after the close of banking hours on that day. Circulation of the check by endorsement would not extend the time for presentment. The purpose of a check is immediate payment from the funds of the drawer, not circulation as an instrument of credit as in the case of a bill or note. However, if the parties are not in the same city, the courts would allow a reasonable time for the check to go through the clearing house depending on the circumstances of the particular facts involved.

Should the bank close before that reasonable time has expired, the debt is not discharged. However, should you present the check later than the time allowed by law, and the bank had closed in the meantime, the debt is discharged and you can recover only such dividends as the receiver of the bank may declare. The court justly reasons that when the check was drawn there was sufficient funds on deposit to honor it. If the drawee had gone to the bank promptly and presented the check for payment, he would have received his money and the drawer of the check would have discharged his debt. Therefore, when you receive a check, present it for payment or deposit it in your bank within twenty-four hours to be on the safe side.

A United States Government Money Order can be endorsed only by two endorsers and must be presented for payment within one year from date of issue.

Roentgenograms

The courts have ruled that roentgenograms remain in the legal property of the dentist, and the patient is not entitled to them. The patient pays for the interpretation of these roentgenograms and not for the films. From a legal standpoint, roentgenograms are of the utmost importance in the courtroom and often are the deciding factor in malpractice suits, which we will discuss shortly. For that and every other reason, a dentist should be reluctant to part with roentgenograms. They should be preserved and filed in the office for future reference.

Damages

The object of awarding damages for breach of contract is to compensate the injured party, as nearly as money can do it, for the injuries arising from the breach of contract. The extent of one's injury is, therefore, the determining factor.

Right of A Dentist to Choose His Patients

Often a dentist is confronted by an undesirable prospective patient and is uncertain whether he is obliged by law to render services to that patient. The law does not compel any dentist to render services to anyone he does not wish to serve. Therefore, a dentist is entirely within his rights to refuse services to anyone he may choose, without exposing himself to any liability.

Torts

The vast domain of laws governing torts deals with any injury or wrong done to another, either in respect to his business, person, property, or possessions, family security, or social standing. In other words, tort embraces all wrongs between man and man for which damages may be collected, but damages must be proved. Without damage or injury there is no cause of action and there can be no recovery. Furthermore, a tort must be a violation of a *legal duty,* as distinguished from a *moral* duty, which the law does not recognize.

Who Is Liable?

In general, every person is responsi-

ble for the natural proximate consequences of his own acts. He is not liable for remote or intervening causes, but only for the proximate or direct cause of his acts. Even a child of tender years is liable for his own torts, unless it is done with the knowledge, consent or advice of the parent or one who acts as his agent.

The general exceptions to tort liability comprise those torts in which a person must be mentally capable of entertaining malice, such as deceit, slander, libel, or malicious prosecution. Therefore, a child of tender years or an insane person cannot be sued on these actions, because they are incapable of entertaining malice.

In Massachusetts and most other jurisdictions a charitable institution is not liable for torts committed by its agents or servants. However, the individual committing the tort is liable, for every person is liable for his own torts. If a doctor on the staff of a charitable hospital is negligent, and the patient dies as a result, the hospital is not liable but the doctor is still personally liable. This is the law, even if the patient had paid for hospitalization and treatment.

The measure of the test of liability is not whether the patient has paid for treatment, but what is done with the proceeds; whether they go into the pockets of the owners of the hospital or to the members of the staff, or whether they are turned into the treasury of the hospital for its continued maintenance, as in the case of a charitable hospital.

The courts reason, and justly so, that a charitable corporation, such as a public hospital, not conducted for profit, is maintained for the best interest and welfare of the public at large. If subject to lawsuits for tort, large verdicts would soon drain the funds, and the purpose for which the institution was established would soon be defeated.

Fright, Shock, Hysterics, Etc.

There can be no recovery for fright, shock, hysterics, and similar mental suffering where there has been no physical contact. Therefore, if a patient was frightened by sparks from your x-ray machine, but there had been no physical contact of the machine or current, there can be no recovery in an action in tort. However, if a person jumps to escape extreme imminent danger, there is liability. The law does not expect one to wait until damage has been done before seeking to escape from injury.

120 Boylston Street.

Dentist's Duties and Liabilities

In general, when a dentist receives a license from the state to practice dentistry, the state confers certain rights and privileges on him and imposes certain other duties and obligations.

The law requires that a dentist should exercise the same reasonable degree of diligence, skill, and care as the *average* dental practitioner in the community in which he practices. A dentist is not a guarantor of his services. When he undertakes to render treatment the law does not require him to guarantee that the treatment will be successful. When a surgeon operates, he does not guarantee that the patient will recover, no more than a lawyer can guarantee that he will win every case he undertakes to prosecute or defend. All that the law requires is that the dentist will exercise such due care and reasonable judgment in the treatment of his patients as would the average dentist in the same community in which he is practicing.

Nor would the fact that the dentist made no charge for the treatment relieve him of the responsibility for exercising due care and reasonable skill. A dentist is just as liable for negligence in treating a charitable patient in his office as if he received generous remuneration.

What the due care and reasonable skill are which the law requires would depend on the average standard as practiced by general practitioners of dentistry in that community. That means that a dentist in a large city where educational facilities are available and standards are somewhat higher would be held to a stricter degree of skill and care than a dentist in a remote country town. *Inasmuch as dentistry is a progressive science, the standards of yesterday would not be a safe measure of skill and due diligence for the standards of today.* While the extraction of teeth without roentgenograms may have been considered good practice in the days gone by, the day is rapidly approaching when it will be considered malpractice to extract a tooth without first obtaining a roentgenogram of it.

The courts have already ruled a failure to first obtain a roentgenogram as malpractice in cases in which the tooth showed clinical evidence of infection before extraction, and awarded judgment against the dentist. While the indiscriminate treatment of pulpless and infected teeth may have been accepted as common practice yesterday, in view of our modern conception of focal infection, it may some day soon be considered malpractice to treat such infected teeth. This leads to the natural conclusion that dentists must be progressive in their methods and treatments and must measure up to the standard of other dentists practicing in the same community.

Not only would a city dentist be held to a higher standard of practice than a remote country practitioner, but dentists in the same city might be held to a stricter degree of skill in one part of the city than in another. For example, a dentist practicing in the exclusive specialist's neighborhood of a large city, and naturally, charging higher fees, would be exepected to practice better dentistry than the dentist whose office is located in the slums of the city. It may be that the former dentist would be expected to take a roentgenogram of a tooth before extraction, whereas the latter dentist may not be held to such strict accountability.

Specialists

A specialist, or one setting himself up as a specialist in any branch of dentistry, would be held to the *highest* degree of skill and judgment. The law would expect him to exercise greater judgment, more exacting skill, and more diligent precautions in the treatment of his patients than the general practitioner. Often, a general practitioner who is sued for malpractice wishes to impress the jury with his high skill and knowledge and sets himself up as a specialist on the witness stand. He thus lays himself open to a handicap in the successful defense of his case. A dentist who is not a specialist should be cautious not to set himself up as such, for it may be used against him to his disadvantage.

(*To be concluded in November*)

MEDICO-DENTAL ADJUSTMENT TO OUR CHANGING SOCIAL ORDER

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Denver

IT IS less than two years since the publication of the Final Report of the Committee on the Costs of Medical Care. The New Deal has functioned for more than a year and a half, acknowledging the government responsibility for jobs, and tentatively, at least, for the care of the people's health. An editorial in *Survey Graphic* (April, 1934) reports Mayor La Guardia as advocating employment insurance, not locally, "not by piecemeal," but nationally, and at the same meeting, Relief Commissioner Hopkins declared himself for employment and health insurance "in one fell swoop." Chairman of the Labor Board, Senator Wagner, and Secretary of Labor, Miss Perkins, have both declared themselves for health insurance.

As someone aptly said, "Rugged individualism has left too many individuals no longer rugged." The furor of official medicine and dentistry over the drastic recommendations of the Costs Committee's recommendations is rapidly changing to an attitude of tolerance, or even advocacy of change from individual office, pay-as-you-please practice, to a grouping of personnel and clientele, and a spread to periodic payments among the members of the whole community or economic class, giving a *steady* income to the physician and dentist. "Public Health and Private Doctors"[1] suggests with no attempt at humor, that "The hungry men are the doctors."

Collective bargaining by the recipients, labor, is officially recognized by our government. Industrial medicine by railroads, mines, and certain industrial plants has long since practiced collective medicine and to some degree, collective dentistry. This has long been largely controlled by well-known surgeons, who have selected their own staffs, and about which, questions of the ethics of making doctor-patient contacts, and patient-doctor choice have never been seriously considered.

In the dental profession, we are indebted largely to Doctors Phillips and Rudolph of the Committee on the Costs of Medical Care for facts relating more particularly to problems of dental practice and current social changes.

We have only to read the daily papers and current magazines to see what the layman is thinking and reading. Hospitalization is now largely governmental, and the American Hospital Association has adopted the plan of periodic payment, as 1 per cent of our population pays for most of the hospitalization in any one year, when wholly unprepared for such an expensive emergency, and when the cost, spread over the whole community would be no great sacrifice. even at the average income. Such an enterprise as the Bridge Clinic (*Time,* April 23, 1934) is an appeal to the people who feel that they cannot afford medico-dental service at prices we feel are only just to ourselves and our families, in our individual office, pay-as-you-can practice. "Make no mistake, the people will get what they want," Doctor Rudolph warned more than a year ago.

Doctor Phillips, always a little ahead in his thinking, gave to the last Chicago Dental Society Midwinter Meeting[2] a summary of the past and present dental situation, and more recently[3] he has briefly but clearly called our attention to the part the forgotten man, the worker, has in the new collectivism. The recipient, the worker, will demand good service, in his rôle of collective bargaining. The importance of Doctor Phillips' statement is amplified in the editorial of the same issue of this magazine.[3]

The International Labor Organization has long advocated sickness insurance, in conference without representation of the healing professions, and nearly all civilized countries have some form of health insurance. Bargaining with the workers is no new thing in this country. The Stanacola Employee's Medical Service of Baton Rouge is successful. It has been operated by agreement of workers with their medical staff for several years, and no interference with treatment is reported. In a recent interview in Denver with Doctor Ray Lyman Wilbur, a few of us were warned that we must save ourselves by group action. The physician, who formerly received nearly all the medical dollar, now gets 30 cents of it. (The dentist gets 12.2 cents.) Doctor Wilbur's warning, "More and more, office practice will be hampered by outside influences," is all-convincing.

Because we have been scientific-minded, it is no great disgrace that we have not been business-minded enough to prosper in proportion to scientific training. This situation cannot continue to exist. Our course has been charted for us by the Committee on the Costs of Medical Care, The Milbank, Rosenwald, and Twentieth Century Funds, and a few in the profession who will not be downed by the popular cry of *status quo*. If we do not do the steering ourselves, the people who have the votes will steer the ship of more universal health service for us.

We cannot stand in our profitless offices and see the procession of progress go by. We must unite in our office arrangements, become partial specialists and consultants, and meet the issue: render our best services to the people we are prepared to serve, in a plan and at a price they can and will approve. The indigent and low-income classes will be brought to us through governmental arrangement. Then, we can really begin to live. Progress in the next generation will not be skyward for the few, but broadened for the many, until it encompasses the earth, as the radio now encircles it.

[1] Worcester, Daisy, L. W.: Public Health and Private Doctors, *Survey Graphic* 23:149 (April) 1934.

4040 East Second Avenue.

[2] Phillips, H. E.: Various Methods Employed Throughout the Country in Furnishing Dental Service to People of the Low Income Group.

[3] Phillips, H. E.: Labor and Health Insurance, DENTAL DIGEST 40:124 (April) 1934

BITE REVISION BY EXTENSIVE PORCELAIN RESTORATIONS

(Continued from September Issue)

HARRY KAZIS, D.M.D.
Cambridge, Massachusetts

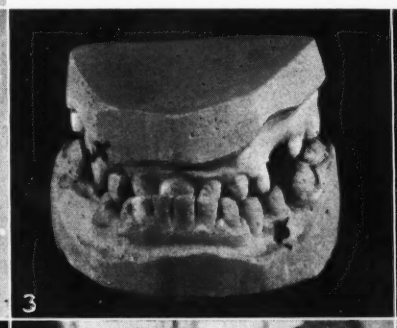
WHEN one is launched into the field of extensive porcelain restorations so many new fields of application and new possibilities in ceramic work are opened before him that a person can hardly conceive how many new developments in the advancement of dentistry he will branch into. For instance, I did not think when transforming the first patient's disfigured teeth into good looking ones that this work would develop into a technique for radically revising a malformed bite. But just such a case came up in my practice: A patient with a badly malformed ("twisted") bite wanted it converted into a normal one. Drastic correction was needed—and extensive porcelain restoration makes drastic corrections so readily possible that this method immediately suggested itself to me as the proper one for this work. I therefore found myself soon at work applying the extensive porcelain method of restorations to this new field of work—the drastic

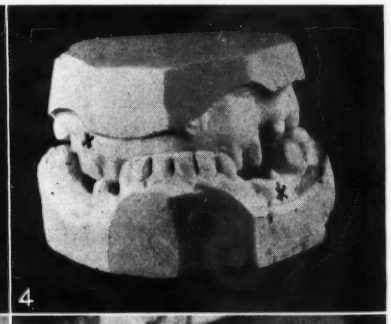
Fig. 1—Original condition of patient's mouth before work was begun. Observe extreme protrusion of lower centrals almost completely covering upper centrals. This is even more strikingly brought out by the models (Figs. 3 and 4).

Fig. 2—View of the mouth open before work was begun to illustrate the disordered upper teeth. Note that although the upper right central is missing, there is no gap where that tooth should be. Because this right central was impacted at an early age, I believe the other teeth closed in, forming a continuous upper arch.

Fig. 3—These models illustrate the original condition of the patient's teeth and bite before the restoration was begun. Observe the extremely retruded upper teeth and protruding lowers, which makes a bite so deformed that the lowers almost completely cover the upper anterior teeth. The lower left bicuspid, marked by a black X, was found by a roentgenogram to be abscessed and was extracted. The extraction accentuated the protrusion of the lower teeth, as shown in Fig.4.

Fig. 4—Abscessed lower left bicuspid removed. Attached to the lower left second bicuspid was a bridge tooth, the first bicuspid. With these two removed, the resulting gap lowered the bite and caused a further protrusion of the lower jaw. Note that this accentuates the deformity of the bite still more so that the lower anteriors completely cover the upper teeth.





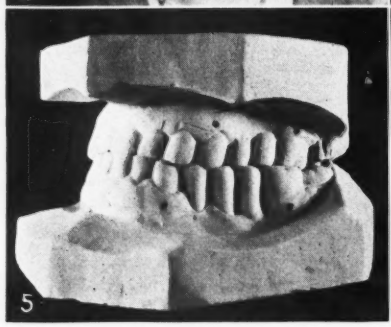


Fig. 5—Left lateral view of completed work. Bite raising was begun on this side. Dots mark those teeth that serve as the bridge abutments.

Fig. 6—Completed upper fixed bridge from first left bicuspid to left second molar. A thimble crown was used as abutment for the first bicuspid, two Steele's posteriors for replacements, and a swaged gold crown as abutment for the molar. The lower bridge here seen completed has a three-quarter crown on the cuspid and a swaged gold crown for the molar abutment with three Steele's posteriors.

Note that the bite is raised by these completed bridges. Upper central, laterals, and cuspids are seen with preparations complete for porcelain jackets. Note particularly the ample spacing and bite clearance to allow good thickness of finished crown.

Fig. 7—Position of operator in preparing tooth for porcelain crown. The operator stands on the patient's right, with the patient reclined at an angle of about 60 degrees, retracting the upper lip with the left index and middle fingers to clear the field for operating; the right thumb rested against the upper teeth for steadying the handpiece. The handpiece is moved in steady strokes with wrist motion, a mounted Popper wheelstone number (302 or 304) being used for removing the bulk of the enamel on the lingual side.

correction of a bad malocclusion into a normal bite. The details setting forth how that method was applied in this case follow:

Preliminary Arrangements

A case of this sort naturally requires extensive preliminary study. Roentgenograms have to be taken, and vitality tests have to be made to check the soundness and vitality of all teeth. Also, a complete set of study models have to be made. But one has to do a great deal more than make an examination and make study models before the actual work can be begun.

In the first place, changing the bite will alter the anatomic relations in the whole mouth; therefore, to be able to deal with the problem competently, the operator must first make a thorough study of the patient's oral anatomic structures and facial features until he can readily visualize all the different possibilities for their adaptation to new anatomic relationships.

Another thing, too, which has to be done in cases of this sort before the work can be begun, is to make photographic studies of all aspects of the work. My experience has been that photographic studies are decidedly needed in addition to study models, because pictures of the original appearance of the mouth help the operator to plan and carry on his work.

Not only is it advisable to take photographic studies of the mouth before the work is begun, but it is even more important to take photographs at every stage of the work as it progresses. This makes it possible for the operator to judge accurately, at each step, whether the work being carried on is in keeping with the plan. He can then know definitely how to alter the plan at each step, and how to make all the little adjustments in the work that are needed to make it proceed exactly in line with what the final outcome of the work is expected to be.

Finally, photographs of the work during all the different stages, particularly the before and after views, demonstrate vividly, to the patient as well as to the dentist, the transformation that has been made. And, in such cases as this, the results are so remarkable that they arouse the patient's interest and sympathy in the work. Such a sympathetic interest on the part of the patient helps indeed inasmuch as the patient is inclined to cooperate with the dentist; consequently it is a great deal easier to carry out the work, and to obtain better results. Moreover, the patient is impressed with the value of the work, and is stimulated to take care of the economic arrangements for it.

The bite abnormality, such as this patient had, is known as a Class III malocclusion (Angle classification), a mesial occlusion bite, with retruded upper incisors and a protruded lower dental arch—an occlusion in which the upper incisors are hidden by the lower incisors. A possible cause of the malformation in this case may have been the impacted right central which the patient had. Roentgenographic diagnosis disclosed that one central, apparently missing, was actually present, but was so impacted it could not be seen. The closing up of the upper arch because of the absence of this tooth probably caused it to become contracted, thus allowing the lower arch to become protruded over it. There are other possible causes, such as mouth breathing and too early extraction of the deciduous teeth.

After the roentgenograms were taken it was found that two teeth had to be extracted: the lower left second bicuspid, which was infected, and the upper right first bicuspid, in which there was a large restoration that caused the tooth to give way. Extraction of these two teeth removed a great deal of the bite support, which made the bite drop considerably and so aggravated to an extreme the lower jaw's protrusion (Figs. 3 and 4).

With all these preliminary factors —study models, photographs, and roentgenograms attended to—a plan of the work could now be formulated.

Procedure

1. First the lower left second molar was properly prepared and a swaged gold crown, to serve as the abutment of a bridge, was made to fit the tooth. An important precaution observed in making this preparation was to remove enough of the mesial angle of the tooth structure so that there would be no inwardly inclined side on the mesial angle, and consequently no difficulty in putting on the finished bridge. This gold crown was built up high enough so that if the operator felt it was too high, it would be possible to cut it down and to correct it. A crown was also fitted on the upper left second molar, in articulation with the distal lingual cusps of the lower second molar. With this done, the raising of the bite was begun.

2. The next step was to prepare the upper left first bicuspid, making a thimble crown to serve as the other abutment for the upper bridge. The purpose of a thimble crown here was to prevent the showing of gold. At the same time it allowed restoring the tooth to an attractive natural form.

3. Then I prepared the lower cuspid with a three-quarter crown to make it the anterior abutment for the lower bridge. It was possible to use a three-quarter crown here, and thus prevent the showing of gold. because the cuspid was a sound, normal tooth.

4. After these abutments were ready, the necessary teeth were selected, two Steele's posteriors (a bicuspid and a molar) on the upper, and three Steele's posteriors (three bicuspids) on the lower. The last selection may seem improper, but it was found to be a more practicable choice than two bicuspids and a molar, for which there was not enough space, or the other alternative, of one bicuspid and a large molar, as can be seen from the model in Fig. 5.

5. The abutments were then tried in and adjusted. After that followed an interesting bit of technique for arriving at the best method and the right amount of raising the bite. I filled the gap to be taken up by the bridges with soft wax. Fitting the stock teeth into this soft wax, I was able to move them around and position them in different ways, until I had figured out the best arrangement and the proper amount for raising the bite (Figs. 5 and 6).

6. Following these studies, the upper bridge was made first and tried into the mouth. With that in place, the lower abutments were again tried in, and a piece of soft wax placed in the bridge gap. The lower facings were again positioned against the wax, and articulated to the upper bridge. In this way good articulation and good appearance were both insured, and a fixed base to work from in raising the bite was formed. The bridges both completed and properly adjusted for bite, the two were cemented in at once. Figs. 5 and 6 show the work just after both upper and lower bridges were cemented into place. The bite was now raised approximately 4 mm.

Preparation for Porcelain Jackets

From then on the work concerned preparations of the teeth for porcelain jackets. The upper left cuspid, and the left lateral, left central, right lateral, and right cuspid, in the order named, were prepared first. Notice that this leaves out the right central, which had to be omitted because it was impacted. I found it, however,

Fig. 8—Steps in preparing tooth for porcelain crowns: Step 1: Remove the bulk of enamel on the labial and lingual sides of tooth (tooth number 1). Precautions and full particulars for carrying out this step is given in the text. See step 1 under "Preparation for Porcelain Jackets." Step 2—Separating the tooth from those adjacent to produce spacing for interproximal sides of crown (tooth marked 2). Clearance is made for crown on interproximal surfaces. Cutting is done so as to space the tooth sparingly both mesially and distally. Although one spaces sparingly, he should be sure to prepare enough clearance for the crowns which should be a porcelain of good thickness. (For advantages of crown of good porcelain thickness see step 3 and for details of procedure in this step see step 2 under "Preparation for Porcelain Jackets.") Step 3—Cut down tooth to proper length (tooth marked 3). The important point in this step is to remove enough of the tooth to allow for good thickness of the jacket at the incisal edge. It is good practice to begin working on the lingual side after this step of cutting the tooth down to proper length and carrying out step 1 on that side by the technique already described. Note: Precautions here important. See text, step 5 under "Preparation for Porcelain Jackets."

Step 4—Finishing up the teeth after separations are made and shoulders are roughly formed (tooth marked 4). Steps 6 and 7 in text, under "Preparation for Porcelain Jackets," explain this step in detail.

An important move, after the shoulder is made and the tooth almost prepared is the one stated in step 8 under "Preparation for Porcelain Jackets" in text.

Fig. 9—Preparation technique. With a safe-sided carborundum disc for separating the teeth, use a slicing motion (grinding straight down from the incisal edge in slices instead of working against the entire interproximal mesial or distal surface.)

Fig. 10—Further illustration of preparation technique using a knife-edged number 304 or 306 Popper stone and beginning at the shoulder already roughly formed to form it into a ledge and work the shoulder close up under the gingival margin of the tooth.

Fig. 11—Method for moving back the upper lip to clear the field for operating and the way to steady the handpiece by counterbalancing with right thumb against the occlusal surface of the adjacent upper teeth. A crosscut fissure bur (number 556 or 557) is used to improve shoulder and to connect shoulders on all surfaces of tooth into one continuous ledge around it.

Fig. 12—Technique of taking band impression of prepared tooth for porcelain jacket. Note upper lip is raised with left index finger to clear the field for operating. At the same time compound is pressed directly in toward the tooth with the right index finger. To be sure of good impression, slight surplus of compound must be forced out over the top of the band as a close study of this illustration shows. Keep compound pressed on thus for three minutes; then chill with cold water before removing. Moisten the compound with oil before taking impression: this prevents it from sticking (adhering) to tooth stump and therefore makes for easy removal.

Fig. 13—Design of upper teeth as they are to appear in finished work, molded in gutta-percha forms. Compare this illustration with Fig. 1 and observe how here, with the bite raised, the patient's facial appearance is decidedly improved.

Fig. 14—Band impressions taken for the porcelain jackets. Note continuity and good width of the shoulder all around the tooth. It can be readily seen why good width and continuity of the shoulder are important for good results in porcelain work; the broad shoulder affords a good seat for the jacket to fit squarely on the tooth; affords better stability; and makes a clean, smooth joint between the base of the tooth and the porcelain crown which seals the tooth completely and leaves no jagged edges to irritate the gums.

Fig. 15—Right central missing from upper arch is impacted. To manage centric occlusion in such a case, see legend to Fig. 16.

Fig. 16—In the upper arch there is one tooth missing. (Figs. 2 and 15). This brings up the problem: How to center the upper teeth? Two arrangements are possible: (1) Upper set restored so that the **left** central be made a **right** central. See Fig. 3 and Fig. 15. (2) Uppers arranged (centered?) so that right **lateral** becomes a right **central**, and the left central remains a left central.

Note the three lines marked on the lower model. (The dots above mark where these lines, if projected, would come to on the upper model.) As one faces the picture, the line on the right marks where the median line for the uppers would come if the first arrangement were used. As one views the patient, this appears at first the logical arrangement to use (Fig. 2).

The line on the left marks where the upper median line would come if the second arrangement were used. See particularly Fig. 3; also Fig. 2. Note, however, between the two outside lines, how much nearer is the one on the left to the line in the center, which line marks the median for the lowers. This means that the second arrangement would bring the upper set much closer to centric occlusion with the lowers than would the first arrangement; it would, therefore, produce the best result in improved appearance of the mouth and face. The second arrangement was therefore chosen, and the choice was justified, as the results in Figs. 17 and 29 show.

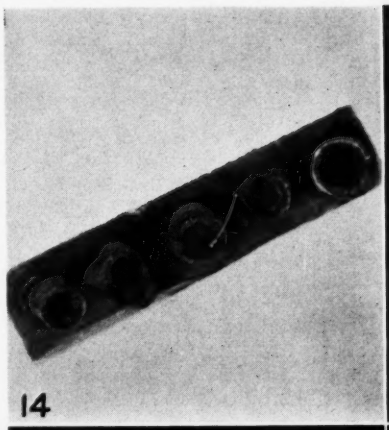
Fig. 17—Finished model shows (by closeness of the upper and lower median lines to center line running through both models) how near the upper teeth are to centric occlusion with the lowers. This proves the method used for choosing the proper centering arrangement is sound. Note also that besides centering the uppers symmetrically with the lowers, this arrangement also makes for a harmonious arrangement of the upper teeth.

Fig. 18—Impression of upper teeth before dies were mounted.

Fig. 19—View of impression showing how dies are mounted in impression tooth forms. Too much care cannot be exercised in setting the dies properly into the impression recesses. Observe form of individual dies from die lying down.

Fig. 20—Working model with dies mounted and bite articulated ready for adapting the matrixes just previous to molding the porcelain.

Fig. 21—Technique for fitting porcelain crowns: This view shows the bite raised and illustrates the following procedure: The porcelain crowns before final glazing are tried on in the mouth with the matrixes in them. In this way one can grind and adjust to proper fit or if necessary add on new porcelain and reglaze them again for final fusing. Then, if tried in and found to fit properly, the matrixes can be removed and the jackets cemented into place. Note in operator's right hand a porcelain crown with matrix in position. Although the crowns shown here are not yet cemented on and still have the matrixes in them, the fine alinement, the good articulation and occlusion can already be seen.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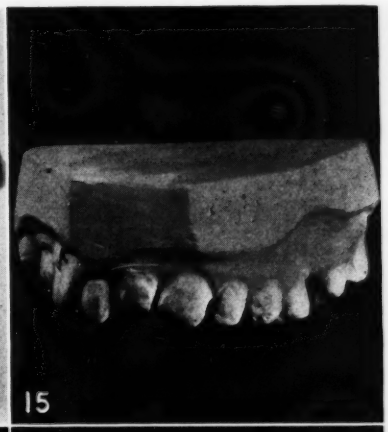
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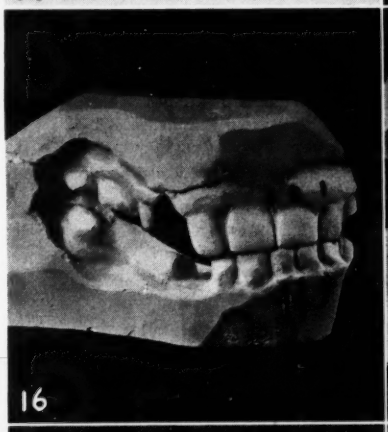
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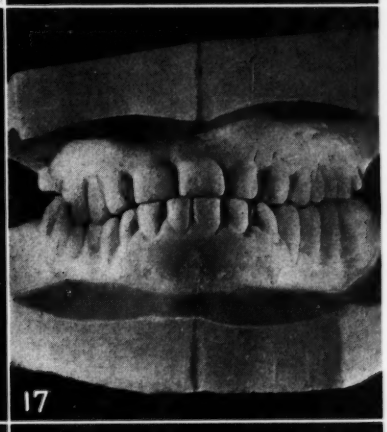
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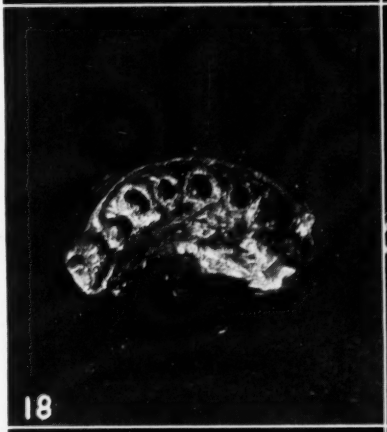
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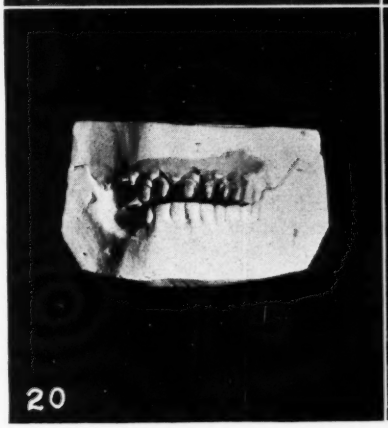
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free from disease. Questioning of the patient disclosed that this tooth, the right central, had never bothered her. And further study, from roentgenograms taken at different angles, showed that even if this impacted tooth should at any later time have to be removed, it could be extracted without disrupting the completed work; therefore, this tooth was not extracted.

In making the preparation, my technique is to start with a small heatless stone, or a number 302 or 304 Popper mounted wheelstone. Instead of working with the grinding face of the stone flat against the tooth, I hold the wheel so inclined to the tooth that it cuts with the corner edge, instead of with the flat face of the wheel's rim (Fig. 7). The cutting is thus done with a sharp edge, instead of a flat face of grindstone. This, I believe, makes the cutting better and quicker and causes less friction.

1. The greater part of the enamel on the labial side is removed first, and then the shoulder is formed at the cervix of the tooth. The operator always works from the gingival margin toward the incisal edge of the tooth, with steady strokes, being careful at all times not to bear down too hard, in order not to overheat the tooth or cause injury to the pulp. To clear the field for operating, the lip is lifted out of the way with the first two left fingers (as can be seen from Fig. 7), thereby at the same time preventing any injury to the mucous membrane.

2. The tooth is separated from those beside it (tooth 2, Fig. 8). For this I use a safe-sided disc doing the cutting so as to space the tooth sparingly, both mesially and distally. But it should be borne in mind that although the spacing is to be done sparingly, enough material must be removed from the interproximal sur-

Fig. 22—Working model and bite showing the finished porcelain jackets articulated and made to come slightly over the lower anteriors.

Fig. 23—Model of the work in the final stage of preparation showing the closing of the bite after the bite was raised by using a fixed bridge having swaged gold crowns for the abutments with two Steele's posteriors and a Steele's facing.

Fig. 24—Right lateral view of completed work. Fitted onto the abutment preparations seen in Fig. 23 are: an upper bridge, comprising a thimble crown on upper right second bicuspid carrying a Steele's facing which closes in the intervening gap; a lower fixed bridge using as abutments the lower second bicuspid and second molar with two Steele's posteriors and a Steele's facing. These teeth will articulate freely during working occlusion.

Fig. 25—Cementing technique: Cement shading: To prevent change of shade by cement showing through jacket make a test of the various cements (pearl gray, gray, white, yellow) by mixing a little of each into a creamy mixture with a drop of water and painting it around the inside of the crown, then seeing the effect it has on the finished tooth, whether the final color blends with the other teeth or not. Then try out in turn different mixtures of the various cements until a mixture is obtained that gives the right shade of the tooth when the crown is finally fitted.

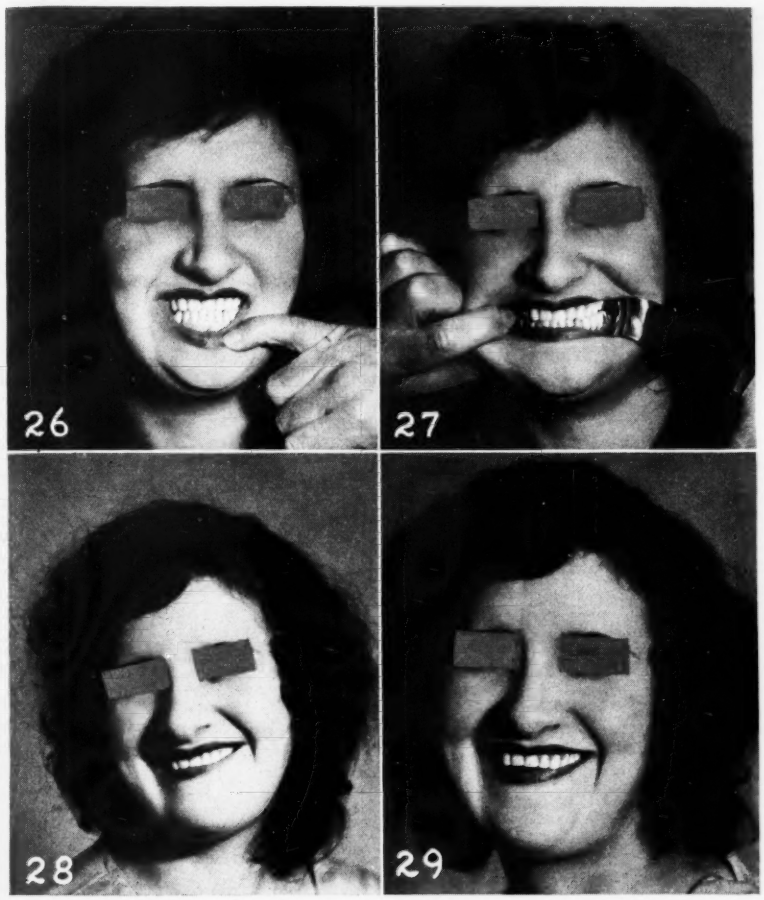

Fig. 26—Note excellent alinement of the upper teeth and their close articulation with the lowers. Also note fine molding of the uppers and their close match in shade with the lower teeth.

Fig. 27—Almost entire set of teeth exposed to view. Fine form and good articulation of the teeth can be seen clear back to the molar abutments.

Fig. 28—Note filling out of the upper lip bringing the lips into normal relation and thus improving the patient's appearance. The droop of the lower lip is almost eliminated; the upper teeth now stand out normally instead of being hidden by the lowers.

Fig. 29—Compare transformation of appearance with Figs. 1 and 2.

faces to allow space for two crowns (Fig. 6).

I have observed that by slicing the interproximal surfaces instead of shaving (grinding straight down from the incisal edge in slices, instead of working against the entire interproximal mesial or distal surface), the cutting is done quicker, the results are better, and there is less friction (Fig. 9).

3. My third step usually is to cut down the tooth to proper length (tooth 3, Fig. 8). It is important in doing so, to remove enough of the tooth for a good thickness of the jacket at the incisal edge.

This consideration, allowing for good thickness of the jacket, must be kept urgently in mind all through the work. It cannot be overemphasized that for the good of the finished work, this must be done on all the surfaces of the tooth: *enough of the tooth should be cut away to allow for a good thickness of porcelain on each surface.* Obviously, a jacket having a good thickness of porcelain on all the tooth surfaces will be strong, and will withstand mastication easily. Also with good thickness of the porcelain all around it, the jacket can be better formed and carved into the anatomic form of a natural tooth. Finally, the porcelain jacket of good thickness does not allow the cement to show through.

4. Following the step of cutting the tooth down to proper length, I begin working on the lingual side. Here I proceed first to remove the greater part of the enamel, using the same small heatless stone, or sometimes either a Miller stone, numbers 209 and 265, or an S. S. White stone, numbers 5, 4, 40, and 6. These are mounted on permanent (fixed) mandrels.

5. When most of the enamel is removed on the lingual side, I start to prepare the shoulder in the manner described for the labial side; namely, by working from the gingival margin to the incisal edge with steady strokes, being careful all the time not to bear down too hard and cause overheating of the tooth or injury to the pulp.

It should be mentioned that in working on the lingual side the precaution of removing enough of the tooth to allow for a good thickness of the jacket must be particularly observed. If the jacket is inadequately built up on the lingual side, its resistance to stress on this side, where the greatest stress comes, is greatly weakened, making the jacket susceptible to fracture at this point.

In shaping the lingual side a great deal depends, too, on the nature of the bite, and this should be taken seriously into consideration. For instance, it is not necessary to remove very much of the enamel for a straight edge-to-edge bite, or for a slight overbite. But in the case of a close bite or a short bite, a larger part of the tooth than usual must be removed to clear the bite. Often, in order to prevent cutting away so much of the tooth as might endanger the pulp, it is a good practice to cut away the incisal edges of the lower incisor teeth, thereby providing additional clearance.

Particularly difficult is this matter of bite clearance in that type of upper overbite in which the lower incisors articulate vertically against the lingual side of the upper incisors and laterals. In cases of that class, therefore, one must be more than usually careful in producing adequate clearance.

6. The teeth are now separated and the shoulders roughly formed. As a succeeding step I use a number 200 or 283 Popper stone to round over the edges. Following this I use a small knife-edged stone (304 or 306 Popper Stone) beginning at the shoulder already roughly formed, to form it into a ledge; striving, as I form it, to work the shoulder close up under the gingival margin of the tooth. After the shoulder is thus defined, one begins working away from the shoulder to the incisal edge, smoothing over the stump, at the same time rounding the edges into broad, round turns (tooth 3, Fig. 8 and Fig. 10). Further to improve the shoulder and to round out the interproximal surfaces, a number 159 or 161 cup-shaped Popper stone is used.

7. The same technique and the

same stones are then used for the lingual side.

8. After the shoulder is made and the tooth almost prepared, the shoulder is gone over with a number 700 and 701 crosscut tapered square fissure bur for number 7 handpiece to try to get under the free margin of the gums as far as possible so as to increase the depth of the shoulder (Fig. 11). Following that I use a 556 or 557 crosscut square fissure bur and connect all the shoulder surfaces into one continuous ledge around the tooth Fig. 8, step 4; (Fig. 11).

9. Band impressions are now taken with the same technique used and fully described in the first article of this series (DENTAL DIGEST, September, 1934). Details are given in that article. Figs. 12 and 14 illustrate the band impressions obtained in this case.

DESIGN AND ARRANGEMENT

The next stage of the work is the most interesting and affords the operator excellent opportunity to exercise skill and ingenuity. This stage is the process of working out the form it is desired the work shall be fashioned into when completed. This designing process is carried out by developing a model of the completed work through molding gutta-percha forms over the stumps of the prepared teeth (Fig. 13).

From the lay-out of the gutta-percha forms, at first the following arrangement of the jackets seemed advisable: to turn the left lateral into a central, and, using the left central as a median guide, to fashion the others accordingly. This arrangement would at first glance appear the obvious one to choose, as a glance at Fig. 15 will show.

This arrangement suggested itself because it would center the left central on a line with the bridge of the nose. But after a careful study of the models, it was seen that by changing the *right* lateral into a central, it would be much nearer centric occlusion. The arrangement decided on was, therefore, to use this right lateral as a central, and to leave the left lateral as a lateral, with the left cuspid remaining a cuspid. Also, it was seen fit to turn the right cuspid into a lateral. This made a harmonious arrangement of teeth, and at the same time afforded improved occlusion. Figs. 15, 16, and 17 bring out clearly the reasons for choice of the arrangement, and the admirable results achieved with it.

CONCLUSION

The possibilities for bite correcting by extensive porcelain restorations are evidently greatest in cases of adults in whom the alveolar process is set, making it much more difficult to move teeth than in young children. The possibilities for bite correcting in these cases by regular orthodontic methods are limited.

For instance, in the particular case illustrated here, the arch was normal and, therefore, the regular orthodontic method or arch expansion would not have been practicable. Furthermore, notice that even if orthodontic appliances were used, the teeth were so disarranged that considerable correction would not be possible, and to expand the arches would only increase that difficulty.

In closing, I feel that this ought to be said about the work: The case described turned out to be eminently successful. *But I do not mean, in describing it, to advocate this method of bite revision as universal, to be used for correcting all bites.* I wish merely to point out, through it, that there are many new possibilities for bite-correcting orthodontia afforded by extensive porcelain restorations.

(End of Second Installment)

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The professional biographies of John H. Nesson, D.M.D., and Harry Kazis, D.M.D. appeared in the September issue of THE DENTAL DIGEST.

The Editor's Page

(*Continued from September Issue**)

CALCIUM plays other rôles in metabolism along with its functions in the calcification of bones and teeth. For instance, (1) the calcium ion exerts an inhibitory effect upon the permeability of the cell membrane. Sodium has an opposite action. (2) Calcium is important in the production of normal cardiac contractions and rhythm. (3) Calcium is necessary for the normal coagulation of the blood, and for the passage of the nerve impulse across the myoneural junction and through the synapses. (4) Calcium *decreases* nerve and muscle irritability. Sodium again exerts an antagonistic action; i. e., *increases* nerve and muscle excitability.

In his excellent book, Cantarow, as a physician, has confined his discussions to the physical rôle of calcium. Recently, however, Donald A. Laird, Ph.D., Director of the Psychological Laboratory of Colgate University, has studied some of the psychologic manifestations of calcium metabolism. In two studies on the relationship between calcium metabolism and sleep, Laird[2] found: (1) Eight weeks' daily observation of the sleep of eight healthy young men indicated that by increasing the calcium metabolism within the normal range by the supplementary feeding of a concentrate containing equal amounts of calcium and phosphorus plus vitamin D, the *quality* of sleep was improved. (2) In a survey of the seasonal sleep of 224 persons, it was found that the natural seasonal variations in calcium metabolism are associated with changing sleep quality; the quality being poorest in the spring when calcium is lowest, better during the late fall or high-calcium season.

In a third study by Laird and Stephan[3] the physiologic fact recorded by Cantarow and substantiated by Loeb, Mathews, Sabbatani, MacCallum, Pearce, and others (the *decrease* of nerve and muscle irritability by the calcium ion) was used in a psychologic survey. Laird and Stephan, writing in psychologic terms, say:

". . . low calcium leaves the individual's nervous and muscular system more exposed to the effects of passing stimuli from the environment. Low calcium metabolism thus makes one more sensitive to the full impact of emotional influences . . . . In half of our subjects, the rise and fall of their emotional tone was paralleled by a rise and fall of their serum calcium; high calcium with them was associated with happy, cheerful, optimistic emotional states, and low calcium was associated with moodiness, depression, pessimism."

Briggs[4] has recently suggested that there may be a relationship between physical and emotional states and the incidence of dental caries. "The emotions of grief, worry, anxiety, or whatever may produce unhappiness or a depressed state of mind seem to be factors that control either what has been termed the buffer substance in the oral fluids, a modification of the dental lymph, as described by Bödecker and Applebaum, or some change in the metabolism that is responsible for the occurrence of dental caries." It seems reasonable to postulate, then, that the depressed emotional states and dental caries may both be due to a common cause: a disturbed calcium metabolism.

It is generally appreciated by clinicians that the inorganic salts are necessary to the life processes: as essential as water, the foodstuffs, or the vitamins. Calcium particularly plays a dramatic part in the clinical experience of the dentist. This element is required for tooth calcification and for bone development; it is essential to the coagulation of blood. Clinicians engaged in all forms of practice witness the havoc produced by a calcium deficiency: pediodontists see the rampant caries of childhood; orthodontists, the disfigurements of the bones of the skull and face in the rachitic patient; periodontists and prosthodontists, the resorption of the alveolar bone; exodontists, the delayed clotting time of the blood. Calcium metabolism, therefore, is not some theoretical subject of interest to physiologists and biochemists alone; the practical man—the clinician—is constantly face-to-face with the phenomena. The emergence of dentistry depends on our seeing and appreciating these and other bio-

(*Continued on next page*)

*In the fourth paragraph of the September installment of this editorial an error occurred. The first sentence of this paragraph should read "One gram of calcium represents the average daily requirement," instead of "One grain. . . ." This fact Cantarow derives from Sherman.

[2]Laird, D. A.: Calcium Metabolism and the Quality of Sleep, Med. J. and Rec. 138:396 (December 6) 1933; Seasonal Changes in Calcium Metabolism and the Quality of Sleep, Med. J. & Rec. 139:65 (January 17) 1934.

[3]Laird, D. A. and Stephan, J. M.: The Relation of Emotional Tone to Blood Calcium, Med. J. & Rec. 138:223 (October 4) 1933.

[4]Briggs, E. F.: Our Emotions—Are They the Controlling Factor in Dental Caries? ORAL HYGIENE 24:1130 (August) 1934.

logic processes. Dentistry is a *biomechanical* science and art.

If we are to accept the validity of the researches of Laird, we see that the behavior of the patient, his ability to tolerate pain and his emotional acceptance of the dental experience, is influenced in part by the state of his calcium metabolism. And the efficiency of the dentist himself is probably affected partly by the state of his calcium metabolism.

It is easy to become eloquent and engage in wide theorizing far afield of scientific fact. It is easy to become an enthusiast and even a faddist and construct pretty theories that cannot be substantiated by the methods of the laboratory. That is not the scientific approach; that is pure crystal-gazing. We dentists should think hard and clearly in scientific and biologic terms; we must, however, be constantly on the alert lest we be seduced by wish-thinkers who construct pretty pictures and theories of the etiology and treatment of disease, nebulous pictures that vanish in the chemical atmosphere of the laboratory and in clinical practice. On the other hand, theories should not be dismissed on the ground that they are theories. When put to the laboratory and clinical test these nebulous pictures sometimes take on concrete form. But they should not be heralded before they are submitted to reasonable tests.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912

OF THE DENTAL DIGEST
AT PITTSBURGH, PA.

Published Monthly
For October 1, 1934

State of Pennsylvania, } ss.
County of Allegheny, }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of THE DENTAL DIGEST, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, publication manager, and business managers are:

Name of—	*Post Office address—*
Editor, E. J. RYAN, B.S., D.D.S.	708 Church Street, Evanston, Ill.
Publisher, M. B. MASSOL	1005 Liberty Ave., Pittsburgh, Pa.
Publication Manager, R. C. KETTERER	1005 Liberty Ave., Pittsburgh, Pa.
Business Manager, J. J. DOWNES	1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are:

DENTAL DIGEST, INC.	1005 Liberty Ave., Pittsburgh, Pa.
ORAL HYGIENE, INC.	1005 Liberty Ave., Pittsburgh, Pa.
M. B. MASSOL	1005 Liberty Ave., Pittsburgh, Pa.
LOUISE A. SMITH	Schenley Apts., Pittsburgh, Pa.
LYNN A. SMITH	1005 Liberty Ave., Pittsburgh, Pa.

3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

M. B. MASSOL, *Publisher*

Sworn to and subscribed before me this 2nd day of October, 1934.

E. G. BURGDORF, Notary Public

[SEAL] (My Commission expires March 6, 1935)

ONE SATURDAY NIGHT BEFORE ELECTION

ON SATURDAY night all life for a dozen miles about converges in Centertown. Farmers come to town to market and to escape in talk from the tyranny of sterile acres. Carpenters and other artisans and their employers meet on corners to make payments and to arrange conditions of contract. Factory workers carry their shop talk to the sidewalks of the town. On the streets of Centertown the life of the community, business and social, is transacted on Saturday night: "I'll meet you on the bank corner at seven o'clock." The small stores and shops do their friendly, leisurely business; the chain stores give their swift impersonal service. A seat in the movie and a parking space are at a premium on Saturday night.

The brown-faced newly shaven men from the farms, and the artisans and laborers, looking uncomfortable in their best clothes, smoke their unaccustomed cigars, tell their ribald stories—and talk. They talk and argue loudly among themselves. Of what? Of the price of corn, of the new airport being built with relief funds, of the factories that are closed, of the laws that are being made or should be made—of the unknown that lurks in the long winter ahead.

The heat and the drouth of summer are over; the chill of autumn is in the air. The sparse harvest has been made. The annual debit and credit account with Nature shows that man has profited little: the planting, the parched acres, the watching, the reaping and gathering are of the days that are gone. Talk on the street corners is not of the months that have past, but of the months to come.

In a second story window above the Citizens Bank of Centertown a white light burns. The lettering on the window reads: Dr. Alfred Fuller, Dentist. From the street corner the silhouette of the dentist may be seen as he bends over the chair, as he reaches for his handpiece, as he turns to his cabinet. Patients come and patients go. Saturday night is a busy time.

"Doc Fuller's doin' a land office business tonight," says Clyde Sybert, one of the bronzed men on the street corner, as he watches the activity behind the white light.

"Yeh?" answers Orville Moore, a companion farmer in the group. "My

old woman is sittin' up there in his office to have a tooth pulled. She hasn't been much good all week."

"I got to have some dentist work done myself," volunteered Sam Biggs, a carpenter working on the relief project at the airport, "if I get hold of a little extra money."

"There's another takin' the chair. That's the third in the last fifteen or twenty minutes since I've been watchin'. I suppose Doc is nickin' them a dollar apiece, too. He must be makin' plenty." This from Sybert.

"Says he's not," answers Biggs. "I done some fixin' on his roof last month and he says nobody pays him. He wanted me to have teeth fixed for pay for my work. I couldn't see that; I want my money."

"Wonder if he would take a couple of bushels of corn or a few dozen eggs for pullin' the old woman's tooth," mused Orville Moore.

"Naw, he wouldn't do that. He's a money grabber." These barbed words came from Bob Tompkins who worked in the local furniture factory before it closed. "One of my kids," he continued, "had four or five little holes in his teeth and this fella Fuller charged me ten dollars for the job! I didn't pay him and I ain't goin' to." Tompkins said this with finality.

"You're right," Sybert agreed, "these docs are high and mighty fellas. I had a touch of flu last winter for a couple weeks and old Doc David came to the house a few times and gave me some pills to physic me and charged me twelve bucks. He can whistle for his money."

Tompkins replied, "They say that Smelt, this fella that's runnin' for Congress, is goin' to fix things so nobody's got to pay doctor bills."

"He promises too much," answered Orville Moore, as he spat over the curbstone.

"Well, maybe he ain't so much as a lawyer, but he's got some pretty good ideas about helpin' us out in these hard times. He's for givin' every old man and woman a pension and payin' every fella that gets out of work. You got to admit them are good ideas." Sybert spoke with some irritation.

"But, say Clyde, who's goin' to pay all this?" asked Moore. "Pensions and payin' everybody's doctor bills; that costs a lot."

"Oh, the government, I guess can afford that," assured Sybert. "They spent money, more money than that on foolish things."

"Where's the government gettin' all this money?" insisted Moore.

"Who cares?" barked Tompkins, "there are plenty of rich fellows. Get more taxes from them. I'm goin' to vote for Smelt. He's for fellas like us."

"I don't know who I'll vote for,

Smelt or Watkins, but I'm goin' to hear Smelt talk tonight."

"What time is he goin' to talk?" asked Biggs.

"Eight o'clock, I guess," answered Sybert.

Biggs drew out the heavy silver watch that hung from the leather fob in his trouser pocket. It was ten to eight.

"Let's start up the hill and get a place near the bandstand. Ten to eight," announced Biggs.

"Well, so long," said Moore as he left the group to meet his wife in Doctor Fuller's office. The other three started up the hill toward the courthouse square to hear J. Victor Smelt, Candidate for Congress.

In his thirty years in Lesome County no one had ever thought of J. Victor Smelt as an important person. He was a lawyer and a notary with the notarial duties occupying most of his time. He read a lot, folks said, but not enough of law for anyone to entrust an important case to him. He was a bill collector, but never paid many of his own bills. He spoke on "Patriotism" frequently to few listeners on Memorial Day and Fourth of July celebrations; his own grown sons, though, failed to face the enlistment officers in 1917. He had run for many offices: for supervisor, for assessor, for county judge. In his political striving he had one distinction—he always pulled the fewest number of votes. He had, however, been consistent. He had always preached the gospel of a square deal to the farmer and working man, and pictured the plague of the capitalists. When wheat sold for two dollars, factory workers wore silk shirts, and artisans made more than a dollar an hour, no one paid much attention to the political theories of J. Victor Smelt.

Now things were different. People were beginning to listen with respect to the opinions of Mr. Smelt. So it was on this Saturday night in October, 1934, when hundreds of persons trampled the grass on the courthouse square in Centertown to be near the bandstand from which Mr. Smelt's booming and indulging voice would carry.

At twenty minutes to nine, Doctor Alfred Fuller, weary after nine hours at the dental chair, switched off his operating light, tossed some instruments into the sterilizer, threw his mussed and soiled gown over the headrest of the chair, and prepared to go home. He reached in a desk drawer and withdrew his day's receipts. He counted seven dollars in one dollar bills, a check for three dollars, and silver to make a total of eleven dollars. "Nine hours, eleven dollars," he brooded as he put the money in his pocket. The receipts of Saturday, the best day in the week would not go far in paying the stack of bills that lay imploringly under a glass paper weight on his desk.

Slowly Alfred Fuller walked up the hill toward home. At the courthouse square he saw the densely packed audience around the bandstand. The prophetic voice of J. Victor Smelt carried to him. The red lights, the demagogic voice, the attentive audience aroused Fuller from his dejection. He walked over and stood in the fringe of the crowd.

Mr. Smelt was warmed up to his subject. He felt the approval of his audience. The field of faces that was turned to him was earnest and in accord. Doctor Fuller was in time to hear this much of Candidate Smelt's speech:

"I have shown you, my neighbors, that the distress of unemployment may be solved by cooperative production and it may be prevented in the future by insurance.

"I have, I hope, convinced you that in a civilized community old age should hold no terrors for a people. The twilight of life should be full of peace and tranquillity. The ghastly fear of the poor house should not hang over anyone's head. Everyone past 60 must be protected by old age pensions. As your Congressman I shall fight the good fight for you and your loved ones. If you elect me, you may be assured of unemployment insurance and old age pensions.

"There is now, my good people, a third form of social protection that I shall battle for. If you elect me I shall protect the health of you and your dear ones as it has never been protected before.

"Under the terms of a bill that I shall present before Congress the dear wives and kiddies and honest toilers of the country will receive all forms and types of medical care from their government. Now the government protects your live stock, furnishes public schools, roads, fire and police protection, but fails to protect your greatest possession—your health.

"Many of you have in these past five dark years seen your dear ones suffer in childbirth, suffer from toothaches, suffer from all the aches and pains that flesh is heir to, because you could not afford the luxury of the physician or the dentist's exhorbitant fee. Your health has been undermined; you have spent sleepless nights on beds of pain; your bodies have been racked by coughs; you have heard the cries of kiddies in the night. For what reason? Because your government has not provided for your health needs.

"If you elect me I promise that every mother's son of you and his family will receive *free* the skillful care of the best physicians, surgeons, dentists, and nurses in this community; *free* hospitals, *free* eyeglasses, and *free* drugs. Your government will, as it should, pay for the health protection of its people.

"Remember me, my dear friends and neighbors, on election day, November 6, 1934, and J. VICTOR SMELT will fight the battles for your comfort and protection before Congress."

Amid promising applause, Mr. Smelt sat down to mop his flushed wet face.

Doctor Alfred Fuller went home to spend a night in which he stared at gargoyles that muttered prophetically: Rent . . . equipment . . . clinics . . . poor dentistry . . . must be done over . . . toil without adequate remuneration . . . political dentistry . . . the government owes you a living . . . why? . . . mechanics . . . where is the profession . . . people used to pride themselves on independence . . . beggars . . . more clinics . . . there used to be a profession. . . .

Was this the year for J. Victor Smelt's first political success?

—E. J. R.

The Publisher's Note Book

IN THE July issue, in typical DENTAL DIGEST style, Doctor Howard R. Raper contributed *Presenting Bite-Wing Technique in Line Drawings.* His unusual article, illustrated with fourteen little drawings, was confined to a single page.

This month readers will find the same author in THE DIGEST'S companion paper, *Oral Hygiene,* in a different rôle. In October *Oral Hygiene* this engaging writer deals with a nontechnical subject, of the sort to which *Oral Hygiene* is almost entirely devoted.

Doctor Raper covers his subject so comprehensively that his article cannot be carried in a single issue; the four chapters into which it is divided will run in the October, November, December, and January numbers.

His topic is *30 Reasons Why People Stay Away From Dentists.* If there is one thing in the world that dentists want to know it is why patients stay away. Doctor Raper tells why. He devoted long hours to analyzing causes, and more long hours to developing suggestions for combatting the responsible conditions.

Doctor Raper's analytic ability is exceptional. If this were not true, he would not have achieved world-wide fame for radiodontic diagnosis. The thousands of dentists who know his reputation for that will not be surprised at his penetrating analysis of patient absenteeism.

The first chapter lists the 30 reasons and presents recommendations for dealing with two of them. The subsequent chapters are devoted to the other 28 reasons.

Doctor Raper says, "I should, I feel, make it quite clear at the outset that I have no panacea to offer. This discourse is essentially diagnostic in character. However, as is true in the practice of medicine and dentistry, the making of the diagnosis sometimes itself suggests the treatment."

The substance of the series was presented as a lecture to Indiana Dental Society members, and later developed and elaborated on for *Oral Hygiene.* Doctor Raper does not mince words. He says, "At times it is deliberately intended to be provocative. I hope those readers who know me less well than the dentists of Indiana will accept what I have to say with the same good humored understanding displayed by my Indiana friends."

MERWIN B. MASSOL, *Publisher.*

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